Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

444 CLUSTER CLOSURE PROJECT

Buildings 427, 449, 449A, 449C, S449, 453, 454 & 457 Pad

REVISION 0

September 23, 2002

CLASSIFICATION REVIEW NOT REQUIRED PER
EXEMPTION NUMBER CEX-005-02

/117

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September 23, 2002

Reviewed by: _____ Date 9/23/02
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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

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EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of certain 444 Cluster facilities (i e , Buildings 427, 449, 449A, 449C, S449, 453, 454 & 457 Pad) Because these facilities were anticipated to be Type 1 facilities, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) All facility surfaces were characterized in this RLC, including the interior and exterior surfaces [i e , floors (slabs), walls, ceilings and roofs] Environmental media beneath and surrounding the facilities were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP) The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report

Results indicate that no radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400 5 All bulk samples of non-friable asbestos containing building materials were negative for asbestos One (1) bulk sample for friable, pipe caulking was positive for asbestos at 15% Chrysotile Beryllium contamination was found in buildings 449, 449A and 453 In Building 449 the elevated beryllium results were discovered on equipment left in the building After the equipment was removed one follow-up smear on the concrete floor was above the investigative level of 0 1 $\mu g/100cm^2$ Four additional beryllium smears were taken as required, and all four were <0 1 $\mu g/100cm^2$ Portions of Building 449A were decontaminated and post-decon smear results were less than the investigative level of 0 1 $\mu g/100cm^2$ A portion of 449A (west Connex box portion) was not decontaminated and will be re-used as a beryllium waste container and will be characterized for disposal outside the scope of this RLCR Since Building 449A is partially contaminated is considered a Type 2 facility Building 453 was not decontaminated, and is therefore considered a Type 2 facility

Fluorescent light ballasts may contain PCBs Any PCB ballasts, asbestos containing materials, and hazardous-waste items will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal,* as applicable All concrete associated with these facilities, except Building 453 concrete, meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete

Based upon this RLCR 427, 449, 449C, S449, 454 and 457 Pad facilities are considered to be Type 1 facilities Based upon this RLCR, Buildings 449A and 453 are considered to be a Type 2 facilities To ensure that the facilities remain free of contamination and that RLC data remain valid, isolation controls have been established, and the facilities have been posted accordingly

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of certain 444 Cluster facilities (i e , Buildings 427, 449, 449A, 449C, S449, 453, 454 & 457 Pad) Because these facilities were anticipated to be Type 1 facilities, a PDS characterization was performed All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities [i e , floors (slabs), walls, ceilings and roofs] Environmental media beneath and surrounding the facilities were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed Among these are the 444 Cluster anticipated Type 1 facilities The locations of these facilities are shown in Attachment A These facilities no longer support the RFETS mission and need to be removed to reduce Site infrastructure, risks and/or operating costs

Before the facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted, this document presents the PDS results The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP) The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility Final conditions are compared with the release limits for radiological and non-radiological contaminants PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types

1.2 Scope

This report presents the radiological and chemical conditions of certain 444 Cluster anticipated RFCA Type 1 facilities Environmental media beneath and surrounding the facilities are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Pre-Demolition survey Plan for D&D Facilities (MAN-127-PDSP) Refer to section 2 0 of MAN-127-PDSP for these DQOs

2 HISTORICAL SITE ASSESSMENT

Facility-specific Historical Site Assessments (HSAs) were conducted to understand facility histories and related hazards The assessments consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP) Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages Results of the facility-specific HSAs were documented in a Historical Site Assessment Report (HSAR, refer to Attachment B) In summary, the HSAR identified a low potential for radiological and chemical hazards, except the potential for asbestos containing materials and PCBs in paint and light ballasts

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The subject 444 Cluster facilities were characterized for radiological hazards per the PDSP Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces Measurements were performed to evaluate the contaminants of concern Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files)

Seven radiological survey packages were developed in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure* Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16 02 *Radiological Surveys of Surfaces and Structures* Radiological survey data were verified, validated and evaluated in accordance with RSP 16 04, *Radiological Survey/Sample Data Analysis* Quality control measures were implemented relative to the survey process in accordance with RSP 16 05, *Radiological Survey/Sample Quality Control* Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, Radiological Data Summary and Survey Maps The radiological survey unit packages are maintained in the RISS Characterization Project files

TSA measurements, RSA measurements, and scan surveys were performed on the eight 444 Cluster anticipated Type 1 facilities Four exterior TSA measurements indicated elevated activity above the transuranic $DCGL_w$ values Elevated TSA readings were identified on the exteriors of 449A, 449, 454 and the 457 Pad Coupon samples were collected and analyzed by gamma spectroscopy, results confirmed all activity was due to uranium and other naturally occurring isotopes All elevated readings are less than the uranium $DCGL_w$ values Refer to the data summaries in Attachment C for further investigation results Therefore, the PDS confirmed that the 444 Cluster anticipated Type 1 facilities do not contain radiological contamination above the surface contamination guidelines provided in the PDSP

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Due to the inaccessibility of the interior surfaces of Cooling Tower 454, 15 biased TSA and smear measurements will be obtained during the demolition phase using the Waste Release Evaluation process The 457 Pad equipment will also be dispositioned using the Waste Release Evaluation process Isolation control postings are displayed on affected structures to ensure no radioactive materials are introduced

4 CHEMICAL CHARACTERIZATION AND HAZARDS

The 444 Cluster anticipated Type 1 facilities were characterized for chemical hazards per the PDSP Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in the facilities Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined A Chemical Characterization Package (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs Refer to Attachment D, Chemical Data Summaries and Sample Maps, for details on sample results and sample locations

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in the aforementioned buildings in accordance with the PDSP A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1* Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector

All bulk samples of non-friable asbestos containing building materials were negative for asbestos One (1) bulk sample (457-04082002-315-227) collected on from pipe caulking on the 457 Pad equipment was positive for friable asbestos at 15% Chrysotile (one (1) cubic foot) Asbestos laboratory analysis data and location maps are contained in Attachment D, "Chemical Data Summaries and Sample Maps " Maps that did not contain any sample locations were not included in this report

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, these buildings were anticipated Type 1 facilities There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in these buildings Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999* Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition

One beryllium smear taken in 449 (sample # 449-04082002-315-108) was above the investigative level of 0 1 µg/100cm^2 Additional investigative beryllium smears were taken in 449, one of the additional investigative smears was above the unrestricted release level at 0 495 µg/100cm^2, on a tool cabinet The tool cabinet was removed from the building to an approved beryllium storage container After the tool cabinet was removed, twenty additional beryllium smears were taken in 449 to confirm that the building was below the 0 2 µg/100cm^2 unrestricted release level and the investigative level of 0 1 µg/100cm^2 However, one result (sample # 449-09032002-231-110) from inside the respirator cabinet was 0 299 µg/100cm^2 After the respirator cabinet was removed from the building to an approved beryllium storage container, follow-up smears were taken of the area with one result on the concrete floor in the northeast corner of the building greater than 0 1 µg/100cm^2 Four additional investigative smears were taken in the area of interest, and all were less than 0 1 µg/100cm^2 Based on the investigations performed above, the actions taken to remove the source of contaminates, and the number of smears taken, B449 meets the unrestricted release level for beryllium and no further sampling is necessary or required

449A is made up of an east and west connex box with an enclosed room between the two connexs During the initial characterization effort, one beryllium smear in the 449A west connex box (sample # 449A-04082002-315-120) was above the 0 2 µg/100cm^2 unrestricted release level Additional investigative beryllium smears were taken in 449A and one of the additional investigative smears was above the unrestricted release level at 0 333 µg/100cm^2 in the room between the east and west connexs Decontamination was conducted in center room of 449A, and follow-up smears were taken of the center room and east connex with all results less than 0 1 µg/100cm^2 The west connex will be separated from the rest of 449A and utilized as a beryllium storage area and/or a beryllium waste container Based on the investigations performed above, the actions taken to remove the source of contaminates, and the number of smears taken, 449A (center room and east connex) meets the unrestricted release level for beryllium and no further sampling is necessary or required However, Building 449A is now classified as a Type 2 facility

Two beryllium smears in 453 (sample #'s 453-04082002-315-126 and 453-04082002-315-130) were above the 0 2 µg/100cm^2 unrestricted release level Building 453 was not decontaminated, and is now classified as a Type 2 facility

Beryllium laboratory sample data, investigation data, and location maps are contained in Attachment D, "Chemical Data Summaries and Sample Maps " Maps that did not contain any sample locations were not included in this report

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on the HSAR, interviews and facility walkdowns of the 444 Cluster anticipated Type 1 facilities, only 449 and 453 had a history that suggested possible RCRA/CERCLA concerns B449 was used as a paint shop, but had no evidence of residues/stains, therefore there are no RCRA/CERCLA concerns and sampling was not required

Historical information of Building 453 (an oil storage facility) indicated oil spills had occurred The oil spilled was both new and used, with the used oil leading to a concern of possible RCRA contamination The slab of 453 was cleaned during the closure of the building and did not appear to have residual contamination However, three concrete core samples, plus one duplicate, were taken at biased locations on the 453 slab, based on very light stains, to alleviate any concerns based on the building's history

TCLP metals analysis did not indicate any results approaching the RCRA limits Volatile Organic Compound analysis indicated extremely low levels of compounds such as acetone, the highest concentration was 47 parts per billion The acetone was present in each of the four samples and was likely an interference resulting from the lab environment Although acetone is a listed waste (F003), historical knowledge of 453 operations, based on WSRIC process review and interviews with building personnel, does not support assignment of the F Code

Sampling for lead in paint in the 444 Cluster anticipated Type 1 facilities was not performed Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal

The facilities may contain some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, leaded glass and lead-acid batteries These items will be removed prior to demolition and managed in accordance with the Colorado Hazardous Waste Act

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSARs, interviews and facility walkdowns of the 444 Cluster anticipated Type 1 facilities, no PCB-containing equipment was present in any of the facilities, making the potential for PCB contamination resulting from spills highly unlikely However, 453 was used for oil storage, and it is possible that some of the oil contained PCBs The slab of 453 was cleaned during the closure of the building and does not appear to have any residual contamination However, three concrete core samples, plus one duplicate, were taken at biased locations on the 453 slab, based on very light stains, to alleviate any concerns based on the building's history The results of these four samples did not indicate the presence of PCBs at regulated levels

Based on the age of facilities (constructed prior to 1980), paints used may contain PCBs, and painted surfaces will need to be disposed of PCB Bulk Product Waste Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K Clough, US EPA Region 8, to J Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete), provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP

Because some facilities may contain fluorescent light ballasts containing PCBs, fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations PCB ballasts will be identified based on factors such as labeling (e g , PCB-containing and non-PCB-containing), manufacturer, and date of manufacturing All ballasts that do not indicate non-PCB-containing are assumed to be PCB-containing

5 PHYSICAL HAZARDS

Physical hazards associated with the 444 Cluster anticipated Type 1 facilities consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls Refer to the Site Safety Analysis Report (PADC-1998-00662) There are no unique hazards associated with the facilities The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of the 444 Cluster anticipated Type 1 facilities, and consequent waste management, are of adequate quality to support the decisions documented in this report The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate

- the *number* of samples and surveys,
- the *types* of samples and surveys,
- the sampling/survey process as implemented "in the field", and,
- the laboratory analytical process, relative to accuracy and precision considerations

Details of the DQA are provided in Attachment E

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of the 444 Cluster Type 1 facilities (i e , 427, 449, 449A, 449C, S449, 454 & 457 Pad) will generate a variety of wastes Estimated waste types and waste volumes are presented below by facility All wastes can be disposed of as sanitary waste, except asbestos containing material, PCB Bulk Product Waste, and small quantities of hazardous-waste items (e g , mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, leaded glass, and lead-acid batteries) There is no radioactive waste Asbestos, PCB ballasts, and any hazardous-waste items will be managed pursuant to Site asbestos and PCB abatement and waste management procedures Building 453 waste shall be considered Beryllium contaminated waste unless beryllium decontamination is performed and post-decon beryllium characterization verifies all surfaces are less than the unrestricted release criteria of 0 2 $\mu g/100cm^2$

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Waste Volume Estimates and Material Types, 444 Cluster Anticipated Type 1 Facilities							
Facility	**Concrete** (cu ft)	**Wood** (cu ft)	**Metal** (cu ft)	**Corrugated Sheet Metal** (cu ft)	**Wall Board** (cu ft)	**ACM** (cu ft)	**Other Waste** (cu ft)
427	1,500	None	240	None	None	None	Insulation 30
449	400	None	150	300	None	None	Insulation 390 Window Glass 2
449A	1,400	2,400	100	None	100	None	Insulation 400
449C	120	600	60	None	300	None	Insulation 300
S449	120	800	4	None	None	None	Roofing 60
453	1,400	None	130	120	None	None	Styrofoam Insulation 120
454	3,200	None	2,200	None	None	None	Pipe Insulation 90
457 Pad	2,400	None	11,400	None	None	1	Pipe Insulation 30

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, the 444 Cluster anticipated Type 1 facilities (i e , Buildings 427, 449, 449C, S449, 454 & 457 Pad) are classified as RFCA Type 1 facilities pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999) The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data Based on newly acquired elevated RLC beryllium data, Buildings 449A and 453 are classified as RFCA Type 2 facilities pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999)

The RLC of the 444 Cluster anticipated Type 1 facilities was performed in accordance with the DDCP and PDSP All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria These facilities do not contain radiological materials Any PCB ballasts, asbestos containing materials, and hazardous-waste items will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal,* as applicable

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Except for Building 453, all concrete associated with these facilities meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA Prior to Building 453 demolition, elevated beryllium contamination will require decontamination and post-decon beryllium characterization verification, or shall otherwise be managed in an approved manner

To ensure that the facilities remain free of contamination and that RLC data remain valid, isolation controls have been established, and the facilities are posted accordingly

9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996 Rocky Flats Cleanup Agreement (RFCA), July 19, 1996

DOE Order 5400 5, "Radiation Protection of the Public and the Environment "

EPA, 1994 "The Data Quality Objective Process," EPA QA/G-4

K-H, 1999 Decommissioning Program Plan, June 21, 1999

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev 1, November 1, 2001

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev 3, January 1, 2002

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev 3, July 15, 2002

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev 0, July 15, 2002

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575, EPA 402-R-97-016)

PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev 1, May 22, 2001

PRO-476-RSP-16 02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev 1, May 22, 2001

PRO-477-RSP-16 03, *Radiological Samples of Building Media*, Rev 1, May 22, 2001

PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev 1, May 22, 2001

PRO-479-RSP-16 05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev 1, May 22, 2001

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition

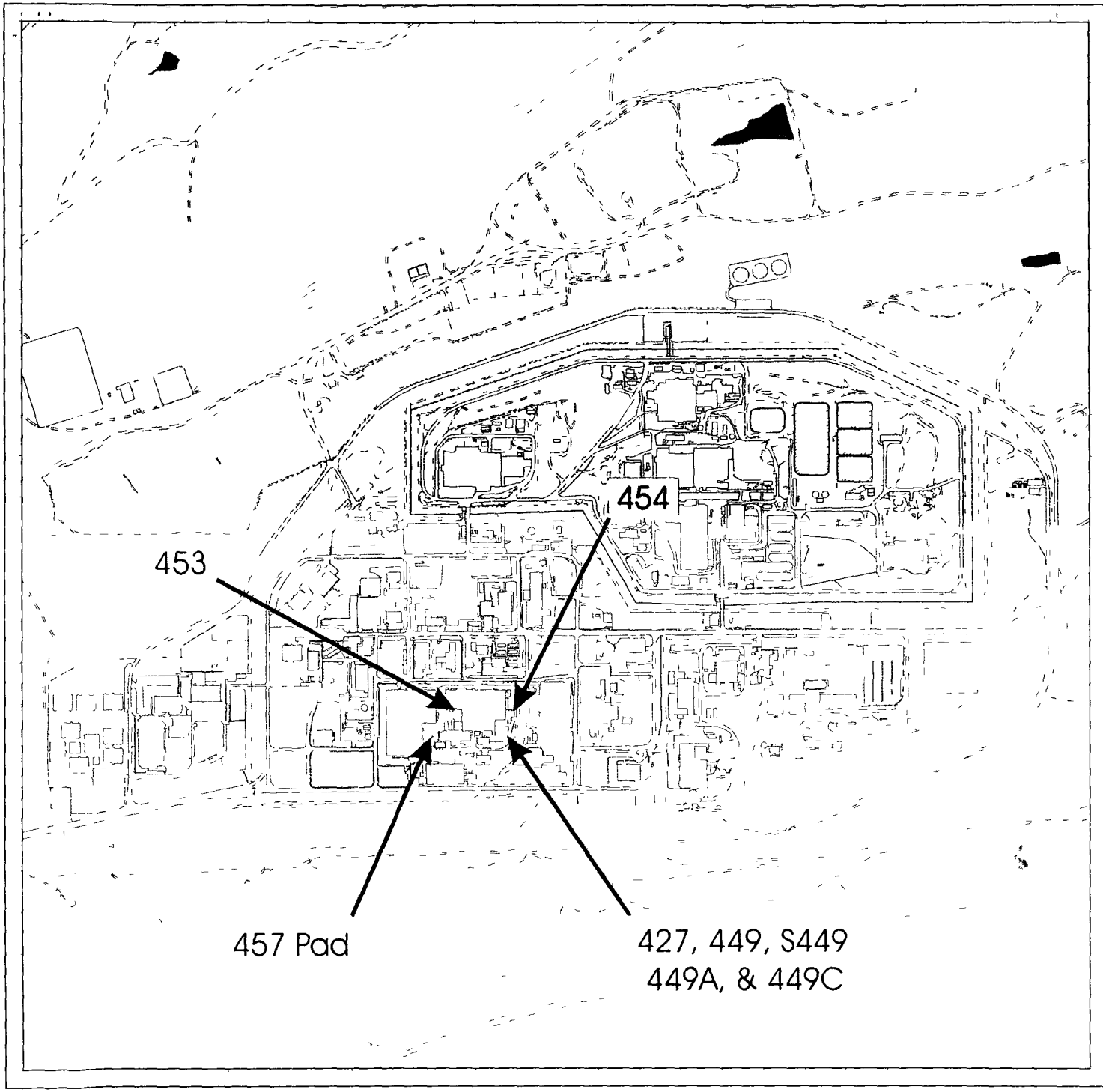
RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal

RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999

RFETS, Historical Site Assessment Report for 444 Cluster Type 1 Facilities, January 15, 2002

ATTACHMENT A

Facility Location Map



444 Cluster
Type 1 Facilities
427, 449, 449A, 449C, S449, 453, 454, & 457 Pad

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams ditches or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES
Buildings fences hydrography roads and other structures from 1994 aerial fly over data captured by EG&G RSL Las Vegas
Digitized from the orthophotographs 1/95

Scale – 1 12460
1 inch represents approximately 1038 feet
250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept 303-966-7707

Prepared by
DynCorp

Prepared for
KAISER HILL

MAP ID FY 2002

August 28 2002

N:_Svr w /projects/fy2002/02 0222/overview_444t.cdr

ATTACHMENT B

Historical Site Assessment Report

D&D RISS Facility Characterization
Historical Site Assessment Report
January 15, 2002, Rev. 0

Facility ID. Area 3 - B445, (Building 444 Group, Type 1 Facilities), which includes Building 427/427A Emergency Generator/Diesel Storage Tank (aka Tank 068) for B444, S444 Bus Stop Car Pool Shelter, Building 445 Carbon Storage and Carbon Dust Collector, S445 Storage Shed, Building 449 Oil & Paint Storage, Building 449A Maintenance Annex, Building 449C Carpenter Shop, S449 Maintenance Storage, Building 453 Maintenance Storage, Building 454 Cooling Tower (444, 800 Tons), Building 457 Cooling Tower (447, 400 Tons), Building 447 Cooling Tower 1 of 3, Building 447 Cooling Tower 2 of 3, and Building 447 Cooling Tower 3 of 3

Anticipated Facility Type (1, 2, or 3) Building 427/427A Type = 1s, S444 = Type 1, Building 445 Type = 1, S445 = Type 1, Building 449 Type = 1, Building 449A Type = 1, Building 449C Type = 1, S449 Type = 1, Building 453 Type = 1, Building 454 Type = 1, Building 457 Type = 1, Building 447 Cooling Tower 1 of 3 = Type 1, Building 447 Cooling Tower 2 of 3 = Type 1, Building 447 Cooling Tower 3 of 3 = Type 1

This facility - specific Historical Site Assessment (HSA) has been performed in accordance with
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Physical Description

Building 427/427A is the Emergency Generator Building and Diesel Storage Tank facilities for Building 444 Building 427 has approximately 312 square feet of floor space and it is located near the southeast corner of Building 444 Tank 427A, aka Tank 068, is the Diesel Storage Tank for Building 427and it is located directly north of the building in a concrete berm Building 427 was constructed in 1975 and it is approximately 16 feet long X 15 feet wide X 12 feet high at the roof eve The facility is constructed with concrete block on a steel reinforced concrete slab-floor and has a steel reinforced poured light-weight concrete flat roof

S444 Bus Stop Car Pool Shelter is located directly north of Building 444 and north of Cottonwood Avenue S444 is constructed from wood and covered with corrugated metal S444 has a plywood floor S444 has no heat and no electricity S444 is approximately 10 feet wide X 12 feet long X 8 feet high at the roof eve and 10 feet high at the roof peak S444 has two 3 feet X 3 feet X ¼ -inch Plexiglas® windows and two open doorways

Building 445 has approximately 3,273 square feet of floor space Building 445 was acquired/constructed in 1958 and is located directly east of the Building 444 and it is now attached to Building 444 Building 445 is 81 feet long X 40 feet wide X 20 high at the roof eve, and 30 feet high at the roof peak The connecting section of Building 445 to Building 444 adds approximately 1,600 square feet (20 feet wide X 81 feet long) to the anticipated Type 1 Facility The Building 445 to Building 444 Connecting Section has a flat built-up-roof with four roof drains and downspouts Building 445's exterior walls and roof covered are with corrugated galvanized metal and sheet-type roof insulation and wall insulation Building 445 is constructed on a concrete slab with a large steel roll-up door on the east and a steel personnel entry door or the north Building 445 has 440-Volt electrical power, a natural-gas heater, electrical and gas re-circulating hot-water heat Building 445 has a LSDW System

S445 Storage Shed is an all wood constructed Maintenance storage facility which is located southeast of Building 445 The storage facility is approximately 18 feet long X 18 feet wide X 10 feet high at the roof eve and 16 feet high at the roof peak S445 has 1-inch plywood walls, floor, and roof which is covered with sheet asbestos-type roofing material S445 has one large sliding wood door S445 has no electrical power, no heating of any kind, and does not have a LSDW System

Building 449 Oil & Paint Storage is metal Butler-type building on a concrete slab and is located directly south of Building 444 The walls are galvanized metal sandwiched over insulation Building 449 is 12 feet wide X 20 long X 12 feet high at the roof eve The facility has a insulated metal roof and also has a large 16-foot wide by 10-foot high fold-up metal door on the north side and a metal personnel entry door on the northwest corner The facility has electrical power and electrical baseboard heat

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Physical Description (Con't)

Building 449A Maintenance Annex is located directly south of Building 444 and it consists of two 40 feet X 8 feet X 8 feet steel cargo containers connected together and 18-foot wide building and peaked roof section The physical sized of Building 449A is approximately 34 feet wide X 40 feet long X 18 feet high at the roof peak

Building 449C Carpenter Shop is located directly south of Building 449A and connects to the building Building 449C is an all wood structure which is approximately 18 feet wide X 18 long feet X 12 feet at the roof eve and 18 feet tall at the roof peak Building 449C has electrical power, electrical heat, and air-conditioning Building 449C has a wood floor that is covered with 12" X 12" floor tile (probably not ACM tile)

S449 Maintenance Storage is an all wood constructed Maintenance storage facility which is located east of Building 449A/449C The storage facility is approximately 40 feet long X 12 feet wide X 10 feet high at the roof eve S449 has 1-inch plywood walls, floor, and roof which is covered with sheet asbestos-type roofing material S449 has no electrical power, no heating of any kind, and does not have a LSDW System

Building 453 Maintenance Storage is located directly west of Building 444 and contains approximately 384 square feet of floor space Building 453 is approximately 16 feet wide X 24 feet long X 16 feet at the roof eve Building 453 has a flat metal and built-up roof that slopes to the west for water drainage Building 453 has two large metal roll-up doors, the one on the south is 10 feet wide and 12 feet tall and the one on the north is 8 feet wide and 12 feet tall There is a personnel access door on the east side near the north wall

Building 454 Cooling Tower is located directly east of Building 444 and its physical size is approximately 24 feet wide X 60 feet long X 10 feet high above the concrete mounting footings/foundation Building 454 Cooling Tower is mounted on four 60-foot X 1-foot I-beams The cooling tower's electrical panels are located on the exterior of the south wall

Building 457 Cooling Tower is located directly west of Building 447 and its physical size is approximately 12 feet wide X 30 feet long X 12 feet high above the concrete mounting footings/foundation Building 454 Cooling Tower is prefabricated steel structure mounted on concrete foundation/footings The cooling tower's electrical panels are located on the east outside wall Building 457 has a roof access steel ladder and the roof has 4-foot high hand-rails

Building 447 Cooling Tower 1 of 3 is located directly east of Building 447 at the southeast corner The Cooling Tower 1 of 3 is approximately 12 feet wide X 16 feet long X 8 feet high and is an all metal piece of equipment mounted on a steel reinforced concrete pad approximately 13 feet wide X 17 feet long X 8 inches this plus concrete footings

Building 447 Cooling Tower 2 of 3 is located directly south of Building 447 The Cooling Tower 2 of 3 is approximately 8 feet wide X 12 feet long X 12 feet high and is an all metal piece of equipment mounted on a steel framework that has concrete footings in the ground below

Building 447 Cooling Tower 3 of 3 is located directly west of Building 447 The Cooling Tower 3 of 3 is approximately 5 feet wide X 6 feet long X 12 feet high and is an all metal piece of equipment mounted on a steel reinforced concrete pad approximately 7 feet wide X 7 feet long X 8 inches this plus concrete footings

Historical Operations

Building 427/427A has always been the Emergency Generator Building and Diesel Storage Tank facilities for Building 444 since it was installed in 1975

S444 Bus Stop Car Pool Shelter was used as such historically when Plant Buses made routine trips between the buildings at RFETS

Historical Operations (Con't)

Building 445 has historically been used as a carbon storage facility for the Building 444 Production Facility Building 445 has two large saws that cut incoming carbon stock material that was machined into production casting molds for ingots and parts Building 445 historically has also stored low-level contaminated waste drums and contaminated waste crates from Building 444 One interviewee said classified mold shapes at times were also stored in Building 445 Due to the materials stored in Building 445, it was generally posted as a RMA

S445 Storage Shed has always been used as a Maintenance storage facility

Building 449 Oil & Paint Storage facility was used for oil, paint, and equipment storage

Building 449A Maintenance Annex was used by various Maintenance Groups to support Building 444 Operations

Building 449C Carpenter Shop was used by Carpenters to support Building 444 Operations

S449 Maintenance Storage was used by Maintenance as a miscellaneous storage facility

Building 453 Maintenance Storage was used by Maintenance as a used Building 444 oil drum storage facility

Building 454 Cooling Tower has always been a cooling tower facility for Building 444

Building 457 Cooling Tower has always been a cooling tower facility for Building 447

Building 447 Cooling Tower 1 of 3 was always been a cooling tower facility for Building 447, Out of Service

Building 447 Cooling Tower 2 of 3 was always been a cooling tower facility for Building 447, Out of Service

Building 447 Cooling Tower 3 of 3 has always been a cooling tower facility for Building 447

Current Operational Status

Building 427/427A currently is in service as Emergency Generator Building and Diesel Storage Tank facilities for Building 444

S444 Bus Stop Car Pool Shelter is currently not being used

Building 445 is currently is being used as a storage facility for Building 444 Building 445 currently has stored contaminated low-level waste drums and waste crates from Building 444 Building 445 currently has a fork-truck stored in the facility and there is a fork-truck charging station on the west wall of Room 700 There are two large graphite stock cutting saws in the west half of Room 700, along with a carbon-dust cyclone separator and vacuum pump system Building 445 appears to be fully operational as a Building 444 Storage Facility, but the cutting saws and vacuum system do not appear to be currently used

S445 Storage Shed currently is being used as Maintenance storage facility with a few cans of roofing tar

Building 449 Oil & Paint Storage is currently in service with minimal use

Building 449A Maintenance Annex is currently in service with minimal use by a Telecommunications Group

Building 449C Carpenter Shop is currently in service with minimal use

S449 Maintenance Storage is currently in service with minimal use

Building 453 Maintenance Storage is Closed and Out of Service

Building 454 Cooling Tower is currently in service

Building 457 Cooling Tower is currently in service

Building 447 Cooling Tower 1 of 3 is currently Out of Service

Building 447 Cooling Tower 2 of 3 is disconnected and currently Out of Service

Building 447 Cooling Tower 3 of 3 is disconnected and currently Out of Service

Contaminants of Concern

Asbestos

Describe any potential, likely, or known sources of Asbestos

Building 445 might have some asbestos containing materials (ACM) of construction because it was constructed in 1958 Building 445's wall, roof, and pipe insulation might contain asbestos One interviewee said low-level waste drums/crates containing asbestos were stored in Building 445, but that he did not believe the facility had any ACM materials of construction Most of the other Building 444 Type 1 Facilities may have some ACM material of construction in wall, roof, and pipe insulation

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Beryllium (Be)

Describe any potential, likely, or known Be production or storage locations

Building 445 is on the RFETS Beryllium (Be) Areas Historical and Present list in Rooms 700, 700A, 700B, 700C and Room 700D One interviewee said low-level waste drums/crates containing Be were stored in Building 445 and shipped out of the building through the east Trucking Door Interviewees said that the used oil drums stored in Building 453 might have contained some Be One interviewee said that the cooling tower pipes and sludge in the Building 454 Cooling Tower and the Building 457 Cooling Tower, might contain Be contamination The Building 447 small cooling towers, 1 0f 3, 2 of 3, and 3 of 3 might also contain some Be contamination All of the rest of the Building 444 Type 1 Facilities such as Building 427, S444 Bus Stop Shelter, S445 Maintenance Storage, Building 449, Building 449A, Building 449C, and S449 Maintenance Storage would not be expected to have any Be contamination

Summarize any recent Be sampling results

No known resent Be sampling has been conducted in Building 445 or any of the other Building 444 Type 1 Facilities

Lead

Describe any potential, likely, or known sources of Lead (e g paint, shielding, etc)

Building 445 was constructed in 1958, therefore it may contain lead-based paints No lead operations were known to have occurred in Building 445 All of the other Building 444 Type 1 Facilities that have paint on them, might have been painted with lead-based paints Facilities S444 and S449 do not have any paint on them

RCRA/CERCLA Constituents

Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e g , chemical storage, waste storage, processes)

Building 445 was never used as a chemical storage facility Cleaning chemicals were used and stored in Building 445 Building 445 has no WSRIC, but it is included in the Building 444 WSRIC at one time Building 445 is not listed on "The Master List of RCRA Units" Building 453 was at one time was a 90-day RCRA Storage Unit, but it is not now Building 449 was known to have stored drums of product oil and product paint as well as paint thinners and other painting supplies

Describe any potential, likely, or known spill locations (and sources, if any)

No known chemical spills ever occurred in Building 445 No known chemical spills occurred in the other Building 444 Type 1 Facilities Oil and paint spills may have occurred in Building 449 Known oil spills did occur in and around Building 453

Describe methods in which spills were mitigated, if any

Unknown

PCBs

Describe any potential, likely, or known sources of PCBs (e g , light ballasts, paints equipment, etc)

Building 445 may contain PCB/lead-based paints Building 445 has lighting ballasts that might contain PCBs No known equipment items containing PCBs, were ever located in Building 445 Lighting ballasts in other Building 444 Type 1 Facilities might contain PCBs

Describe any potential, likely, or known spill locations (and sources, if any)

None

Describe methods in which spills were mitigated, if any

None

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Radiological Contaminants

Describe any potential, likely, or known radiological production or storage locations

Building 445 has had radiological contaminated drums and crates stored in Room 700 Building 445 stores low-level contaminated waste drums and low-level contaminated waste crates from Building 444 until shipments could be made out of the facility Building 445 is currently posted as a RMA

Describe any potential, likely, or known spill locations (e g , known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc)

No known sealed radioactive sources were ever stored in Building 445

Describe methods in which spills were mitigated, if any

None

Describe any potential, likely, or known isotopes of concern (e g , weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc)

None

Describe any potential, likely, or known external facility contamination (e g , stack release points, unfiltered ventilation, facility's physical location to known site releases, etc)

None

Environmental Restoration Concerns

Describe any ER concerns that could affect facility characterization (e g , IHSSs, PACs, UBCs)

IHSS/PAC 400-136 2 is very near the land for Building 445 and Building 454 Cooling Tower Building 445 is anticipated to be a Type 1 Facility, but it falls under Building 444-UBC as shown on the Under Building Contamination Site Map Building 453 sits in IHSS/PAC 400-182

Additional Information

Describe any additional information that may be useful during facility characterization (e g , contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc)

Building 445 is not listed in the RFETS Historical Release Reports No WSRIC data currently exists for Building 445

References

Provide all sources of information utilized to gather data for facility history (e g , documents, files, interviews) Attach all applicable supporting documentation

Sources reviewed to complete this HSA were the RFETS Facility list, the Historical Release Report, the Listing of Beryllium Areas Historical and Present, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases Building 445 does not have a Facility Safety Analysis Report (FSAR) but it is included in the FSAR for Building 444 Building 445 does not have a WSRIC, but it is included in the Building 444 WSRIC In addition, a facility walkdown of Building was performed The Facility Manager for Building 444 was interviewed for all the Building Type 1 Facilities and he was very familiar with every one of them, except he knew very little about the Maintenance and Maintenance Storage Facilities

Waste Volume Estimates and Material Types For Building 427, Building 444 Type 1 Facility

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
1,500	None	240	None	None	TBD	30 cu ft insulation

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Waste Volume Estimates and Material Types For S444, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
4	100	None	30	None	TBD	None
Waste Volume Estimates and Material Types For Building 445 and Carbon Dust Collector B444 Type Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
9,500	None	21,200	4,000	1,200	TBD	4,000 cu ft Insulation
Waste Volume Estimates and Material Types For S445, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
10	1,500	6	None	None	TBD	60 cu ft Roofing Material
Waste Volume Estimates and Material Types For Building 449, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
400	None	150	300	None	TBD	2 cu ft window Glass 390 cu ft Insulation
Waste Volume Estimates and Material Types For Building 449A, Building 444 Type Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
1,400	2,400	100	None	100	TBD	400 cu ft Insulation
Waste Volume Estimates and Material Types For Building 449C, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
120	600	60	None	300	TBD	300 cu ft Insulation

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Waste Volume Estimates and Material Types For S449, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
120	800	4	None	None	TBD	60 cu ft of Roofing
Waste Volume Estimates and Material Types For Building 453, Building 444 Type Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
1400	None	130	120	None	TBD	120 cu ft Styrofoam Insulation
Waste Volume Estimates and Material Types For Building 454 Cooling Tower, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
3,200	None	22,000	None	None	TBD	90 cu ft Pipe Insulation
Waste Volume Estimates and Material Types For Building 457 Cooling Tower, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
2,400	None	11,400	None	None	TBD	30 cu ft Pipe Insulation
Waste Volume Estimates and Material Types For Building 447 Cooling Tower 1 of 3, Building 444 Type Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
400	None	1000	None	None	TBD	200 cu ft Insulation
Waste Volume Estimates and Material Types For Building 447 Cooling Tower 2 of 3, Building 444 Type 1 Facility						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)

60	None	320	None	None	TBD	60 cu ft Insulation

Waste Volume Estimates and Material Types For Building 447 Cooling Tower 3 of 3, Building 444 Type 1 Facility

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
30	None	200	None	None	TBD	30 cu ft Insulation

Further Actions

Recommend any further actions, if any (e g , characterization, decontamination, special handling, etc)

Begin the RLC/PDS process

Note

This HAS was performed prior to SME walkdowns, and chemical and radiological characterization package preparations SMEs should evaluate and/or verify all information during the RLC/PDS process SMEs may need to review additional documentation and perform additional interviews Information contained in this HSA Report only represents a "snapshot" in time Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report However, this HSA Report will not be amended The RLC data will take precedence over the information in this HSA Report RLC data will appear in the RLCR/PDSR

Prepared By Bob Sheets / Bob Sheets / 1/15/2002

Name Signature Date

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ATTACHMENT C

Radiological Data Summaries and Survey Maps

SURVEY UNIT 444-A-001
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B427 (Interior & Exterior)

27

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	11 2		dpm/100 cm^2
MAX	54 0		dpm/100 cm^2
MEAN	14 6		dpm/100 cm^2
STD DEV	21 6		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	1 5		dpm/100 cm^2
MAX	14 2		dpm/100 cm^2
MEAN	5 1		dpm/100 cm^2
STD DEV	4 2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT 444-A-001
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra
Model	DP 6	DP 6
Instrument ID#	7	8
Serial #	1260	1379
Cal Due Date	8/27/02	11/20/02
Analysis Date	6/28/02	6/28/02
Alpha Eff (c/d)	0 228	0 204
Alpha Bkgd (cpm)	2 0	3 3
Sample Time (min)	1.5	1 5
LAB Time (min)	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	18 0	88 2	4 0	19 6	54 0
2	8	6 0	29 4	8 0	39 2	4 8
3	8	10 0	49 0	8 7	42 6	14 8
4	8	5 3	26 0	7 3	35 8	8 2
5	8	17 3	84 8	9 3	45 6	50 6
6	8	8 0	39 2	10 0	49 0	5 0
7	8	9 3	45 6	10 0	49 0	11 4
8	8	6 0	29 4	4 7	23 0	4 8
9	8	4 7	23 0	6 7	32 8	11 2
10	8	16 0	78 4	4 0	19 6	44 2
11	8	8 0	39 2	2 7	13 2	5 0
12	8	12 0	58 8	8 0	39 2	24 6
13	8	13 3	65 2	8 0	39 2	31 0
14	8	6 7	32 8	5 3	26 0	1 4
15	8	8 7	42 6	8 0	39 2	8 4

1 Average LAB used to subt act from Gross Sample Activity

34 2	Sample LAB Average
MIN	11 2
MAX	54 0
MEAN	14 6
SD	21 6
Transuranic $DCGL_W$	100

QC Measurements

5 QC	7	11.3	49 6	4 7	20 6	32 0
3QC	7	4 7	20 6	3 3	14 5	3 1

1 Average QC LAB used to subtract from Gross Sample Activity

17 5	QC LAB Average
Transuranic $DCGL_W$	100

L9

SURVEY UNIT 444-A-001
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC 4
Instrument ID#	1	2
Serial #	958	763
Cal Due Date	11/3/02	6/30/02
Analysis Date	6/28/02	6/28/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 3	0 5
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	8 8	10 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1 0	2 1
2	2	2 0	4 5
3	1	3 0	8 2
4	2	1 0	1 5
5	1	4 0	11 2
6	2	0 0	-1 5
7	1	1 0	2 1
8	2	3 0	7 6
9	1	1 0	2 1
10	2	2 0	4 5
11	1	3 0	8 2
12	2	2 0	4 5
13	1	5 0	14 2
14	2	1 0	1 5
15	1	2 0	5 2
		MIN	-1 5
		MAX	14 2
		MEAN	5 1
		SD	4 2
		Transuranic DCGL$_W$	**20**

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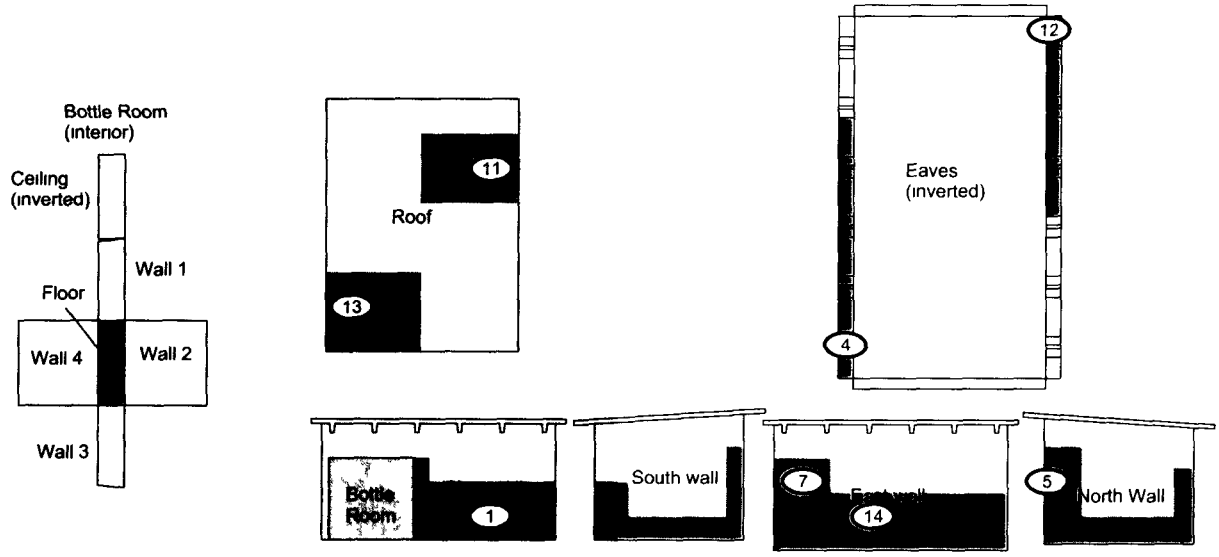
PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

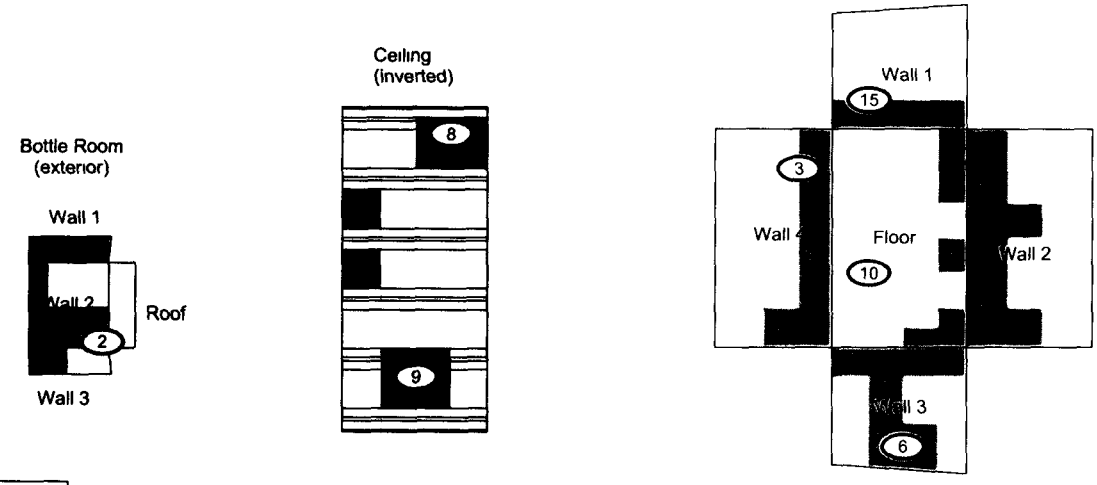
Survey Area A **Survey Unit 444-A-001** **Classification 3**
Building 427 (Generator Bldg)
Survey Unit Description Interior & Exterior
Total Area 291 sq m **Total Floor Area 26sq m**
Total Roof Area 42sq m

427 Generator Bldg

427 Exterior



427 Interior



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s)
7, 8, 9 & 1, 2, 3

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL

MAP ID 02-0222/B427-SC December 12 2002

3)

SURVEY UNIT 444-A-003
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B449 (Interior & Exterior)

32

444-A-003
PDS Data Summary

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-12 2		dpm/100 cm^2
MAX[1]	108 0		dpm/100 cm^2
MEAN	21 5		dpm/100 cm^2
STD DEV	28 4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-1 2		dpm/100 cm^2
MAX	8 2		dpm/100 cm^2
MEAN	2 2		dpm/100 cm^2
STD DEV	3 3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

1 - A coupon sample was collected from location 10 and analyzed using the Canberra ISOCS system No americium or plutonium was detected Sample activity was determined to be from uranium and naturally occuring isotopes
The Sample Net Activity of 108 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm2) for uranium
All survey results are less than the applicable DCGLs therefore no further investigation is required

SURVEY UNIT 444-A-003
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP-6
Instrument ID#	7	8
Serial #	1260	1379
Cal Due Date	8/27/02	11/20/02
Analysis Date	6/28/02	6/28/02
Alpha Eff (c/d)	0 228	0 204
Alpha Bkgd (cpm)	2 0	3 3
Sample Time (min)	1 5	1 5
LAB Time (min)	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2]
1	7	5 3	23 2	5 3	23 2	5 4
2	7	9 3	40 8	0 7	3 1	22 9
3	7	6 0	26 3	5 3	23 2	8 4
4	7	14 7	64 5	7 3	32 0	46 6
5	7	2 0	8 8	4 0	17 5	9 1
6	7	10 7	46 9	4 0	17 5	29 0
7	7	10 7	46 9	4 0	17 5	29 0
8	7	9 3	40 8	7 3	32 0	22 9
9	7	1 3	5 7	0 7	3 1	12 2
10	7	28 7	125 9	2 0	8 8	108 0
11	7	10 0	43 9	3 3	14 5	26 0
12	7	7 3	32 0	3 3	14 5	14 1
13	7	7 3	32 0	3 3	14 5	14 1
14	7	7 3	32 0	6 7	29 4	14 1
15	7	4 7	20 6	4 0	17 5	2 7
					17 9	Sample LAB Average
					MIN	12 2
					MAX	108 0
					MEAN	21 5
					SD	28 4
					Transuranic DCGL$_W$	100

1 Average LAB used to subtract from Gross Sample Activity

2 A coupon sample was collected from location 10 and analyzed using the Canberra ISOCS system No americium or plutonium was detected Sample activity was determined to be from uranium and naturally occuring isotopes The Sample Net Activity of 108 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm2) for uranium All survey results are less than the applicable DCGLs therefore no further investigation is required

QC Measurements

4 QC	8	13 3	65 2	2 0	9 8	47 3
11 QC	8	12 0	58 8	5 3	26 0	40 9
					17 9	QC LAB Average
					MIN	40 9
					MAX	47 3
					MEAN	44 1
					Transuranic DCGL$_W$	100

1 Average QC LAB used to subtract from Gross Sample Activity

4

SURVEY UNIT 444-A-003
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	1197	971
Cal Due Date	10/3/02	7/16/02
Analysis Date	6/28/02	6/28/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 3	0 4
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	8 8	9 4

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	0 0	-0 9
2	2	0 0	-1 2
3	1	3 0	8 2
4	2	1 0	1 8
5	1	0 0	0 9
6	2	1 0	1 8
7	1	2 0	5 2
8	2	3 0	7 9
9	1	0 0	-0 9
10	2	1 0	1 8
11	1	1 0	2 1
12	2	2 0	4 8
13	1	0 0	-0 9
14	2	0 0	-1 2
15	1	2 0	5 2
		MIN	-1 2
		MAX	8 2
		MEAN	2 2
		SD	3 3
		Transuranic DCGL$_W$	**20**

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Analysis Results Header 8/15/2002 10 55 50 AM Page 1

****
***** GAMMA SPECTRUM ANALYSIS *****
** Canberra Mobile Laboratory Services **
****

Report Generated On . 8/15/2002 10 55 50 AM

RIN Number 02S0210
Analytical Batch ID · 0208124732
Line Item Code RC10B019

Filename A \G1900051 CNF

Sample Number · 02S0210-018 001
Lab Sample Number : CMLS-1592
Sample Receipt Date 8/12/2002
Sample Volume Received 1 05E+002 Grams

Result Identifier N/A

Peak Locate Threshold 3 00
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 1 000 keV

Sample (Final Aliquot Size) 1 051E+002 Grams
Sample Quantity Error 0.000E+000
Systematic Error Applied 0 000E+000

Sample Taken On 8/09/2002 2 45 00 PM
Acquisition Started 8/13/2002 11 46 33 AM

Count Time 3600 0 seconds
Real Time . 3602 8 seconds
Dead Time 0 08 %

Energy Calibration Used Done On : 7/01/02
Energy = -0 102 + 0 250*ch + -3.87E-008*ch^2 + 2 95E-012*ch^3

Corrections Applied·
None

Efficiency Calibration Used Done On 8/13/02
Efficiency Geometry ID · 02S0210-018 001

Analyzed By Marilyn Umbaugh Date 8/15/02

Reviewed By Larry Umbaugh Date 8/15/02

16

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID · 02S0210-018 001

Analytical Batch ID . 0208124732

Sample Type (Result Identifier) G19

Lab Sample Number . CMLS-1592

Geometry ID 02S0210-018 001

Filename A \G1900051 CNF

Detector Name· BEGE4732

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	5 80E+000	1 94E+000	2 60E+000
CS-137	0 00E+000	0 00E+000	2 18E-001
TL-208	0 00E+000	0 00E+000	2 16E-001
PO-210	0.00E+000	0 00E+000	1 95E+004
BI-212	0 00E+000	0 00E+000	3 08E+000
PB-212	0 00E+000	0 00E+000	2 46E-001
BI-214	4 03E-001	1 91E-001	2 79E-001
PB-214	0 00E+000	0 00E+000	4 07E-001
RA-226	0 00E+000	0 00E+000	3 22E+000
AC-228	0.00E+000	0 00E+000	8 61E-001
TH-230	0 00E+000	0 00E+000	3 65E+001
Th-231	0.00E+000	0 00E+000	1 51E+000
PA-234	0 00E+000	0 00E+000	2 94E-001
PA-234M	0 00E+000	0 00E+000	2 53E+001
U-235	0.00E+000	0 00E+000	1 97E-001
U238/234	2 44E+000	9 33E-001	1 37E+000
AM-241	0 00E+000	0 00E+000	4 94E-001

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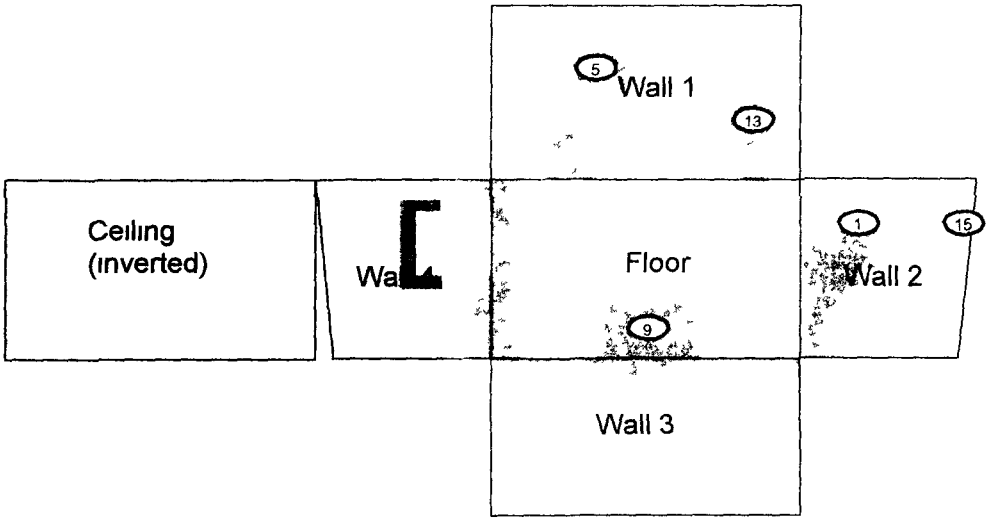
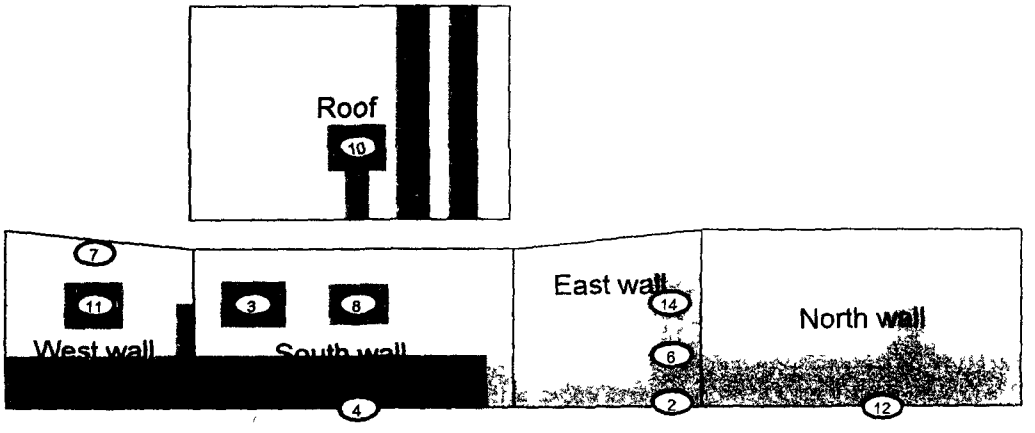
PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-003** **Classification 3**
Building 449
Survey Unit Description Interior & Exterior
Total Area 187 sq m **Total Floor Area 20 sq m**
Total Roof Area 25 sq m

449 Interior



449 Exterior



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8
RCT ID #(s) 1, 7

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-966 7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for
KAISER HILL

MAP ID 02-0222/449-SC July 18, 2002

SURVEY UNIT 444-A-004
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description. B449A (Interior & Exterior)

Total Surface Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-6 7		dpm/100 cm^2
MAX[1]	121 7		dpm/100 cm^2
MEAN	17 5		dpm/100 cm^2
STD DEV	29 2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-0 9		dpm/100 cm^2
MAX	5 2		dpm/100 cm^2
MEAN	0 8		dpm/100 cm^2
STD DEV	1 7		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

1 - A coupon sample was collected from location 11 and analyzed using the Canberra ISOCS system No americium or plutonium was detected Sample activity was determined to be from uranium and naturally occuring isotopes The Sample Net Activity of 121 7 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm2) for uranium All survey results are less than the applicable DCGLs, therefore no further investigation is required

'0

SURVEY UNIT 444-A-004
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra
Model	DP-6	DP 6	DP 6
Instrument ID#	7	8	9
Serial #	1249	1425	1260
Cal Due Date	10/5/02	11/29/02	8/27/02
Analysis Date	7/1/02	7/1/02	7/1/02
Alpha Eff. (c/d).	0 207	0 222	0 228
Alpha Bkgd (cpm)	0 0	4 0	1 0
Sample Time (min)	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2]
1	7	9 3	44 9	4 7	22 7	32 0
2	7	8 7	42 0	2 0	9 7	29 1
3	7	1 3	6 3	2 7	13 0	6 7
4	7	5 3	25 6	0 7	3 4	12 6
5	7	6 0	29 0	3 3	15 9	16 0
6	7	5 3	25 6	2 0	9 7	12 6
7	9	22 0	96 5	5 3	23 2	83 5
8	9	4 7	20 6	3 3	14 5	7 7
9	9	6 0	26 3	6 7	29 4	13 4
10	7	2 7	13 0	0 7	3 4	0 1
11	9	30 7	134 6	4 0	17 5	121 7
12	7	2 7	13 0	2 0	9 7	0 1
13	7	2 7	13 0	3 3	15 9	0 1
14	7	2 0	9 7	4 7	22 7	3 3
15	9	2 0	8 8	1 3	5 7	4 2
16	9	7 3	32 0	4 7	20 6	19 1
17	9	3 3	14 5	0 0	0 0	1 5
18	7	2 0	9 7	2 0	9 7	3 3
19	7	2 0	9 7	0 0	0 0	3 3
20	7	2 7	13 0	1 3	6 3	0 1
21	7	6 0	29 0	4 7	22 7	16 0
22	7	10 0	48 3	4 7	22 7	35 3
23	7	3 3	15 9	2 0	9 7	3 0
24	7	10 0	48 3	0 0	0 0	35 3
25	7	6 7	32 4	3 3	15 9	19 4
					13 0	Sample LAB Average
					MIN	-6 7
					MAX	121 7
					MEAN	17 5
					SD	29 2
					Transuranic DCGL$_W$	100

1 Average LAB used to subtract from Gross Sample Activity

2 A coupon sample was collected from location 11 and analyzed using the Canberra ISOCS system No americium or plutonium was detected Sample activity was determined to be from uranium and naturally occuring isotopes

The Sample Net Activity of 121 7 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm2) for uranium

All survey results are less than the applicable DCGLs therefore no further investigation is required

QC Measurements

19QC	8	2 0	9 0	2 7	12 2	6 1
6QC	8	6 0	27 0	4 0	18 0	11 9
					15 1	QC LAB Average
					MIN	6 1
					MAX	11 9
					MEAN	2 9
					Transuranic DCGL$_W$	100

1 Average QC LAB used to subtract from Gross Sample Activity

11

SURVEY UNIT 444-A-004
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	1048	821
Cal Due Date	5/28/02	12/9/02
Analysis Date	7/1/02	7/1/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 3	0 1
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	8 8	7 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	2	1	2 7
2	1	0	-0 9
3	1	1	2 1
4	2	0	-0 3
5	1	1	2 1
6	2	0	-0 3
7	1	1	2 1
8	1	1	2 1
9	1	0	-0 9
10	1	0	-0 9
11	2	0	-0 3
12	2	1	2 7
13	2	1	2 7
14	2	0	-0 3
15	2	1	2 7
16	2	0	-0 3
17	1	0	-0 9
18	1	0	-0 9
19	1	1	2 1
20	2	0	-0 3
21	1	2	5 2
22	2	0	-0 3
23	1	0	-0 9
24	2	0	-0 3
25	1	1	2 1
		MIN	-0 9
		MAX	5 2
		MEAN	0 8
		SD	1 7
		Transuranic DCGL$_W$	20

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Analysis Results Header 8/15/2002 10 55 50 AM Page 1

```
**************************************************************************
*****      G A M M A   S P E C T R U M   A N A L Y S I S      *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
**************************************************************************
```

Report Generated On · 8/15/2002 10 55 50 AM

RIN Number · 02S0210
Analytical Batch ID 0208124732
Line Item Code · RC10B019

Filename. A \G1900051 CNF

Sample Number 02S0210-018 001
Lab Sample Number CMLS-1592
Sample Receipt Date 8/12/2002
Sample Volume Received · 1 05E+002 Grams

Result Identifier · N/A

Peak Locate Threshold 3 00
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) 100 - 8192
Identification Energy Tolerance 1 000 keV

Sample (Final Aliquot Size) 1 051E+002 Grams
Sample Quantity Error · 0 000E+000
Systematic Error Applied · 0 000E+000

Sample Taken On 8/09/2002 2 45 00 PM
Acquisition Started 8/13/2002 11 46 33 AM

Count Time 3600 0 seconds
Real Time . 3602 8 seconds
Dead Time : 0 08 %

Energy Calibration Used Done On 7/01/02
Energy = -0 102 + 0 250*ch + -3 87E-008*ch^2 + 2 95E-012*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On · 8/13/02
Efficiency Geometry ID 02S0210-018 001

Analyzed By Marilyn Umbaugh Date 8/15/02

Reviewed By Larry Umbaugh Date 8/15/02

13

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 02S0210-018 001

Analytical Batch ID 0208124732

Sample Type (Result Identifier) G19

Lab Sample Number · CMLS-1592

Geometry ID · 02S0210-018 001

Filename A \G1900051.CNF

Detector Name BEGE4732

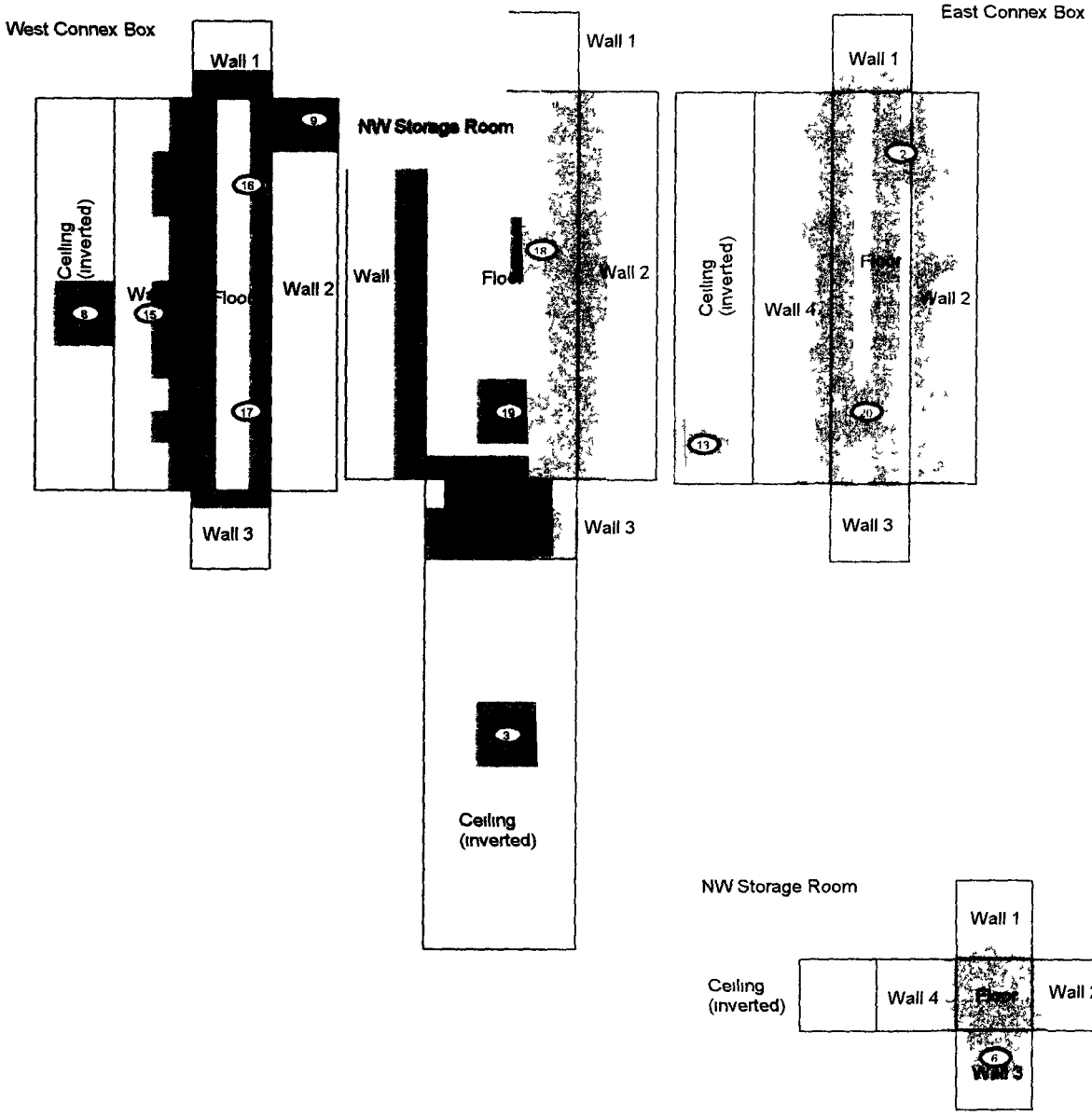
MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	5 80E+000	1 94E+000	2 60E+000
CS-137	0.00E+000	0 00E+000	2 18E-001
TL-208	0.00E+000	0 00E+000	2 16E-001
PO-210	0.00E+000	0 00E+000	1 95E+004
BI-212	0 00E+000	0 00E+000	3 08E+000
PB-212	0 00E+000	0 00E+000	2 46E-001
BI-214	4 03E-001	1 91E-001	2 79E-001
PB-214	0 00E+000	0 00E+000	4 07E-001
RA-226	0 00E+000	0 00E+000	3 22E+000
AC-228	0 00E+000	0 00E+000	8 61E-001
TH-230	0 00E+000	0 00E+000	3 65E+001
Th-231	0 00E+000	0 00E+000	1 51E+000
PA-234	0 00E+000	0 00E+000	2 94E-001
PA-234M	0 00E+000	0 00E+000	2 53E+001
U-235	0 00E+000	0 00E+000	1 97E-001
U238/234	2.44E+000	9 33E-001	1 37E+000
AM-241	0 00E+000	0 00E+000	4 94E-001

PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-004** **Classification 3**
Building 449A
Survey Unit Description Interior & Exterior
Total Area 694 sq m **Total Floor Area 114 sq m**
Total Roof Area 131sq m

449A Interior



Scan Area

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- *Area in Another Survey Unit*

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8, 9
RCT ID #(s) 1, 2, 3

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303 966 7707 Prepared for

DynCorp
THE ART OF TECHNOLOGY

KAISER-HILL

MAP ID 02-0222/449A iN SC July 9, 2002

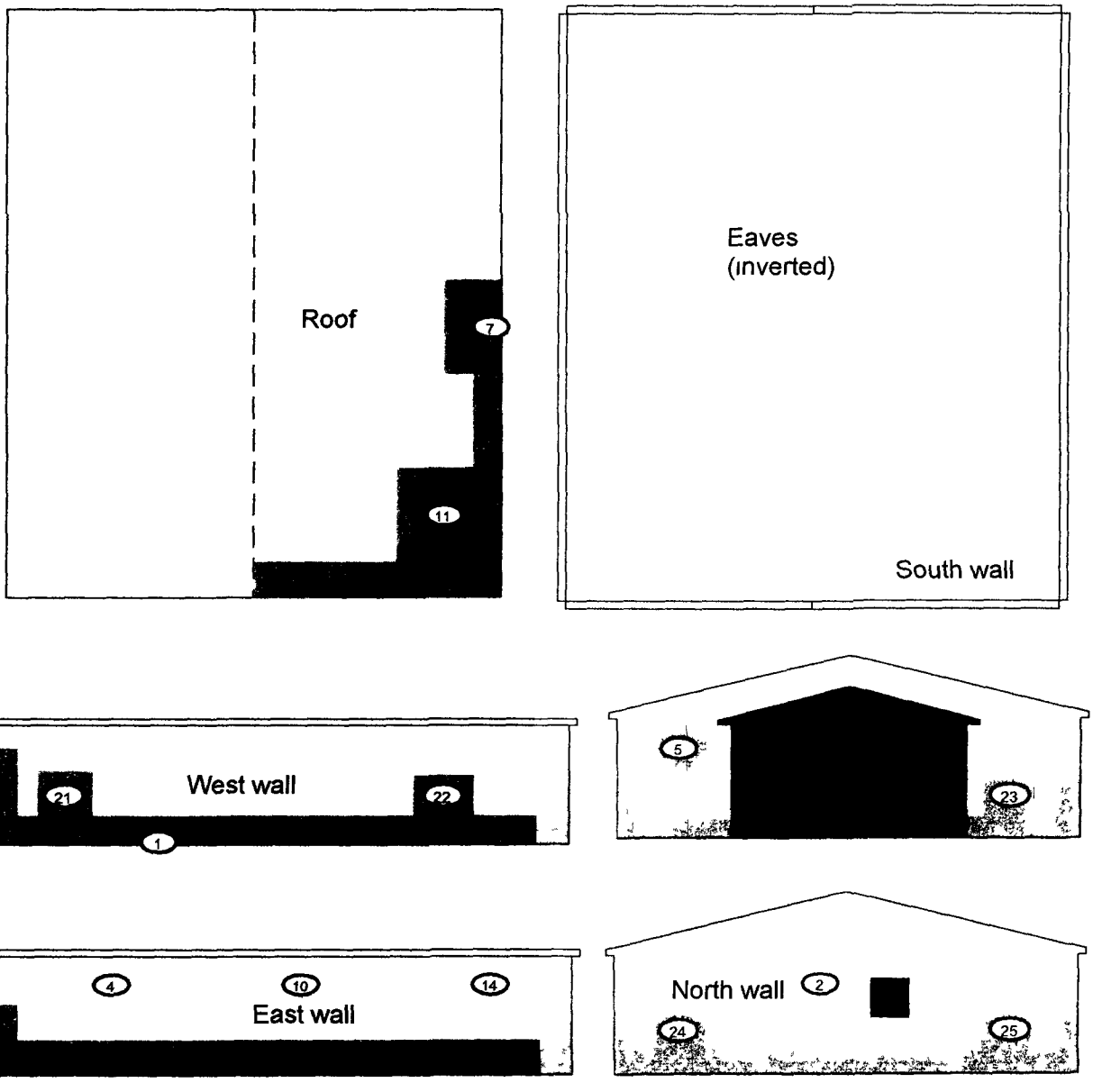
45

PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-004** **Classification 3**
Building 449A
Survey Unit Description Interior & Exterior
Total Area 694 sq m **Total Floor Area 114 sq m**
Total Roof Area 131sq m

Scan Area

449A Exterior



SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8, 9
RCT ID #(s) 1, 2, 3

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303 966 7707 Prepared for

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL

MAP ID 02-0222/449A EX-SC July 18, 2002

SURVEY UNIT 444-A-005
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B449C (Interior & Exterior)

17

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-16 4		dpm/100 cm^2
MAX	31 8		dpm/100 cm^2
MEAN	0 5		dpm/100 cm^2
STD DEV	13 1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	0 9		dpm/100 cm^2
MAX	2 7		dpm/100 cm^2
MEAN	0 6		dpm/100 cm^2
STD DEV	1 5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

48

SURVEY UNIT 444-A-005
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP 6
Instrument ID#	7	9
Serial #	1425	1249
Cal Due Date	11/29/02	10/5/02
Analysis Date	7/1/02	7/1/02
Alpha Eff (c/d)	0 222	0 207
Alpha Bkgd (cpm)	4 0	0 0
Sample Time (min)	1 5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	5 3	23 9	14 0	63 1	1 6
2	7	4 0	18 0	3 3	14 9	7 4
3	7	5.3	23 9	1 3	5 9	1 6
4	7	2.7	12 2	4 7	21 2	13 3
5	7	6.7	30 2	9 3	41 9	4 7
6	7	6.0	27 0	6 0	27 0	1 6
7	7	4 3	19 4	4 0	18 0	6 1
8	7	10 0	45 0	4 0	18 0	19 6
9	7	8 7	39 2	4 7	21 2	13 8
10	7	6 0	27 0	7 3	32 9	1 6
11	7	6 0	27 0	4 7	21 2	1 6
12	7	2 0	9 0	3 3	14 9	16 4
13	7	4 0	18 0	7 4	33 3	7 4
14	7	2 7	12 2	2 0	9 0	13 3
15	7	12 7	57.2	8 7	39 2	31 8

1 Average LAB used to subtract from Gross Sample Activity

25 4	Sample LAB Average
MIN	16 4
MAX	31 8
MEAN	0 5
SD	13 1
Transuranic DCGL$_W$	100

QC Measurements

15QC	9	3 3	15 9	4 0	19 3	-6 5
8QC	9	4 7	22 7	5 3	25 6	0 2

1 Average QC LAB used to subtract from Gross Sample Activity

22 5	QC LAB Average
Transuranic DCGL$_W$	100

19

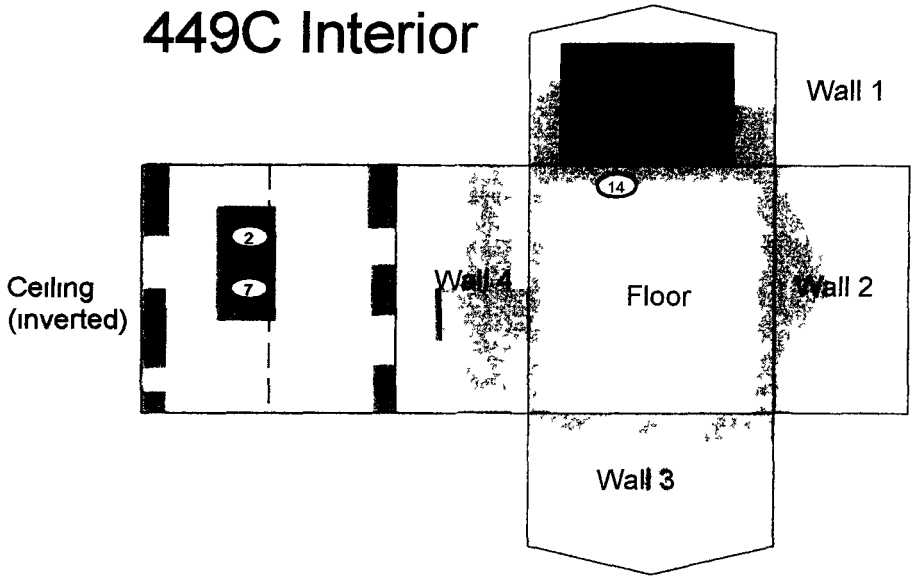
SURVEY UNIT 444-A-005
RSC - DATA SUMMARY

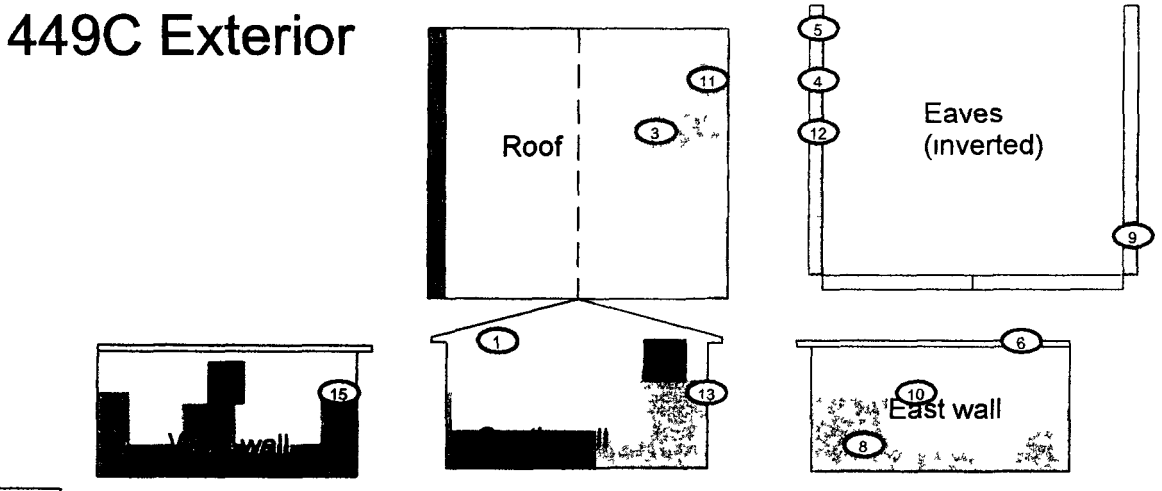
Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	1048	821
Cal Due Date	8/28/02	12/9/02
Analysis Date	7/1/02	7/1/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 3	0 1
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	8 8	7 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1	2 1
2	1	1	2 1
3	2	0	-0 3
4	2	1	2 7
5	2	0	-0 3
6	2	0	-0 3
7	1	1	2 1
8	2	1	2 7
9	1	0	-0 9
10	2	0	-0 3
11	1	0	-0 9
12	2	0	-0 3
13	1	0	-0 9
14	1	1	2 1
15	1	0	-0 9
		MIN	-0 9
		MAX	2 7
		MEAN	0 6
		SD	1 5
		Transuranic DCGL$_W$	20

PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-005** **Classification 3**
Building 449C
Survey Unit Description Interior & Exterior
Total Area 157 sq m **Total Floor Area 22 sq m**
Total Roof Area 29 sq m





SURVEY MAP LEGEND

- (#) Smear & TSA Location
- (#) Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 9
RCT ID #(s) 1, 2

U S Department of Energy
Rocky Flats Environmental Technology Site

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DynCorp
THE ART OF TECHNOLOGY

MAP ID 02-0222/449C-SC July 9, 2002

SURVEY UNIT 444-A-006
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description S449 (Interior & Exterior)

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-7 9		dpm/100 cm^2
MAX	64 7		dpm/100 cm^2
MEAN	21 6		dpm/100 cm^2
STD DEV	21 5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-0 3		dpm/100 cm^2
MAX	6 1		dpm/100 cm^2
MEAN	1 3		dpm/100 cm^2
STD DEV	2 0		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT 444-A-006
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP-6
Instrument ID#	7	9
Serial #	1249	1379
Cal Due Date	10/5/02	11/20/02
Analysis Date	7/2/02	7/2/02
Alpha Eff (c/d)	0 207	0 202
Alpha Bkgd (cpm)	2.7	4 7
Sample Time (min)	1 5	1 5
LAB Time (min)	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	11 3	54 6	4 7	22 7	33 7
2	9	9 3	46 0	8 0	39 6	25 1
3	7	6 0	29 0	2 0	9 7	8 1
4	9	17 3	85 6	7 3	36 1	64 7
5	9	10 0	49 5	4 7	23 3	28 6
6	7	2 7	13 0	1 3	6 3	7 9
7	7	7 3	35 3	1 3	6 3	14 3
8	7	6 7	32 4	4 0	19 3	11 4
9	7	2 7	13 0	1 3	6 3	7 9
10	9	8 0	39 6	6 7	33 2	18 7
11	9	9 3	46 0	3 3	16 3	25 1
12	7	4 0	19 3	2 7	13 0	1 6
13	7	8 0	38 6	3 3	15 9	17 7
14	9	16 7	82 7	5 3	26 2	61 7
15	9	10 7	53 0	8 0	39 6	32 0
					20 9	Sample LAB Average
					MIN	7 9
					MAX	64 7
					MEAN	21 6
					SD	21 5
					Transuranic DCGL$_W$	100

1 Average LAB used to subtract from Gross Sample Activity

QC Measurements

3 QC	9	13 3	65 8	6 0	29 7	19 6
13 QC	9	12 7	62 9	12 7	62 9	16 6
					46 3	QC LAB Average
					Transuranic DCGL$_W$	100

1 Average QC LAB used to subtract from Gross Sample Activity

54

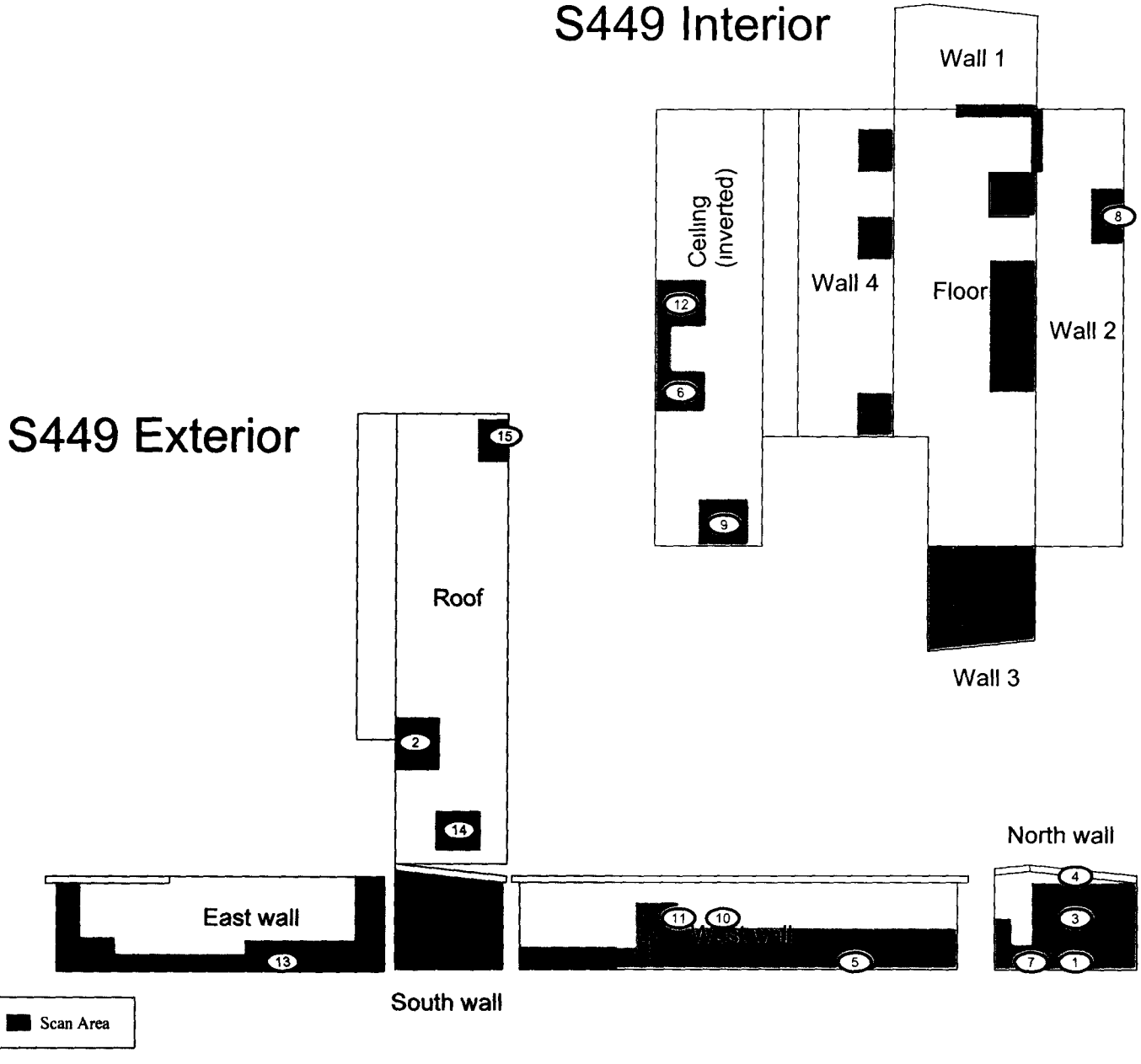
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	1048	821
Cal Due Date	8/28/02	12/9/02
Analysis Date	7/2/02	7/2/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 0	0 1
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	4 5	7 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1	3 0
2	2	0	-0 3
3	1	1	3 0
4	2	0	-0 3
5	1	2	6 1
6	2	0	-0 3
7	1	1	3 0
8	2	0	-0 3
9	1	1	3 0
10	2	0	-0 3
11	1	0	0 0
12	2	0	-0 3
13	1	0	0 0
14	2	1	2 7
15	1	0	0 0
		MIN	-0 3
		MAX	6 1
		MEAN	1 3
		SD	2 0
		Transuranic DCGL$_W$	**20**

PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-006** **Classification 3**
Building S449
Survey Unit Description Interior & Exterior
Total Area 188 sq m **Total Floor Area 30 sq m**
Total Roof Area 33 sq m



SURVEY MAP LEGEND
- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s)
1, 2, 7, & 8

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KAISER HILL

MAP ID 02-0222/S449-SC December 12, 2002

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SURVEY UNIT 444-A-007
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B453 Interior and Exterior & 457 Pad

57

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-3 6		dpm/100 cm^2
MAX[1]	109 9		dpm/100 cm^2
MEAN	28 2		dpm/100 cm^2
STD DEV	31 4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-0 3		dpm/100 cm^2
MAX	3 0		dpm/100 cm^2
MEAN	0 8		dpm/100 cm^2
STD DEV	1 4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

2 - The initial Sample Net Activity result for location 14 was 109 9 dpm/100cm^2

A media sample was collected from the concrete surface at location 14 and analyzed using the Canberra ISOCS system

No americium or plutinium was detected

The media sample results were converted to dpm/100cm^2 as calculated on the Media Sample Conversion sheet

The calculated uranium value of 245 7 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm^2) for uranium

All survey results are less than the applicable DCGLs therefore no further investigation is required

SURVEY UNIT 444-A-007
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6	DP 6
Instrument ID#	7	8	9	10
Serial #	1420	1249	1379	1379
Cal Due Date	9/27/02	10/5/02	11/20/02	11/20/02
Analysis Date	7/2/02	7/2/02	7/2/02	7/10/02
Alpha Eff (e/d)	0 223	0 207	0 202	0 202
Alpha Bkgd (cpm)	3 3	2.7	4 7	4 7
Sample Time (min)	1 5	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2]
1	8	8 0	38 6	3 3	15 9	23 0
2	7	2 7	12 1	3 3	14 8	3 6
3	7	2 7	12 1	3 3	14 8	3 6
4	9	3 3	16 3	6 0	29 7	0 7
5	8	8 7	42 0	1 3	6 3	26 4
6	7	5 3	23 8	3 3	14 8	8 1
7	9	8 0	39 6	4 7	23 3	23 9
8	10	12 7	62 9	4 7	23 3	47 2
9	8	6 7	32 4	4 7	22 7	16 7
10	7	4 0	17 9	0 7	3 1	2 3
11	7	9 3	41 7	0 7	3 1	26 0
12	10	15 3	75 7	4 0	19 8	60 1
13	7	18 7	83 9	4 7	21 1	68 2
14	7	28 0	125 6	1 3	5 8	109 9
15	9	6 7	33 2	3 3	16 3	17 5

15 7	Sample LAB Average
MIN	3 6
MAX	109 9
MEAN	28 2
SD	31 4
Transuranic DCGL$_W$	100

1 Average LAB used to subtract from Gross Sample Activity

2 The initial Sample Net Activity result for location 14 was 109 9 dpm/100cm^2
A media sample was collected from the concrete surface at location 14 and analyzed using the Canberra ISOCS system
No americium or plutonium was detected.
The media sample results were converted to dpm/100cm^2 as calculated on the Media Sample Conversion sheet
The calculated uranium value of 245 7 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm^2) for uranium
All survey results are less than the applicable DCGLs, therefore, no further investigation is required

QC Measurements

9QC	9	6 7	33 2	4 0	14 6	21 1
6QC	8	7 3	35 3	2 0	9 7	23 2

12 1	QC LAB Average
MIN	21 1
MAX	23 2
MEAN	22 1
Transuranic DCGL$_W$	100

1 Average QC LAB used to subtract from Gross Sample Activity

59

Media Sample Conversion Calculation Sheet

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g[1]	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$)	ESTIMATED MDA ($dpm/100cm^2$)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
457 pad	14	O2D0210 020 001	U-235	0 896	0 118	29	24 5	36	5		
			U-238	5 220	0 805			210	32	**245 7**	
			Pu-239 Pu-240	0 000	1 462			0	59		
			Am-241	0 000	0 196			0	8		**0.0**

1 - Critical Level test criterion were used in this analysis If the peak area was less than L_C(critical level), then a "not detected" or "zero" decision was made

60

SURVEY UNIT 444-A-007
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	1048	821	770	851
Cal Due Date	8/28/02	12/9/02	7/25/02	10/29/02
Analysis Date	7/2/02	7/2/02	7/12/02	7/12/02
Alpha Eff (c/d)	0 33	0 33	0 33	0 33
Alpha Bkgd (cpm)	0 0	0 1	0 1	0 4
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	9 0	9 0	9 0	9 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	0 0	0 0
2	2	1 0	2 7
3	1	0 0	0 0
4	2	0 0	-0 3
5	1	0 0	0 0
6	2	1 0	2 7
7	1	1 0	3 0
8	3	0 0	-0 3
9	2	0 0	-0 3
10	1	1 0	3 0
11	2	0 0	-0 3
12	4	1 0	1 8
13	1	0 0	0 0
14	2	0 0	-0 3
15	1	0 0	0 0
		MIN	-0 3
		MAX	3 0
		MEAN	0 8
		SD	1 4
		Transuranic DCGL$_W$	**20**

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Analysis Results Header 8/15/2002 11 12 32 AM Page 1

```
**********************************************************************
*****      G A M M A   S P E C T R U M   A N A L Y S I S      *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
**********************************************************************
```

Report Generated On 8/15/2002 11 12 32 AM

RIN Number : 02S0210
Analytical Batch ID 0208124732
Line Item Code · RC10B019

Filename A·\G1900053 CNF

Sample Number · 02S0210-020 001
Lab Sample Number . CMLS-1594
Sample Receipt Date : 8/12/2002
Sample Volume Received : 2.86E+001 Grams

Result Identifier N/A

Peak Locate Threshold : 3 00
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) . 100 - 8192
Identification Energy Tolerance 1 000 keV

Sample (Final Aliquot Size) . 2 863E+001 Grams
Sample Quantity Error . 0.000E+000
Systematic Error Applied · 0.000E+000

Sample Taken On 8/09/2002 10 37 00 AM
Acquisition Started . 8/13/2002 3 27 47 PM

Count Time . 86400 0 seconds
Real Time 86468 6 seconds
Dead Time . 0.08 %

Energy Calibration Used Done On · 7/01/02
Energy = -0 102 + 0.250*ch + -3 87E-008*ch^2 + 2 95E-012*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 8/13/02
Efficiency Geometry ID 02S0210-020 001

Analyzed By. Marilyn Umbaugh Date 8/15/02

Reviewed By· Larry Umbaugh Date 8/15/02

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 02S0210-020 001

Analytical Batch ID 0208124732

Sample Type (Result Identifier) G19

Lab Sample Number CMLS-1594

Geometry ID 02S0210-020 001

Filename A \G1900053 CNF

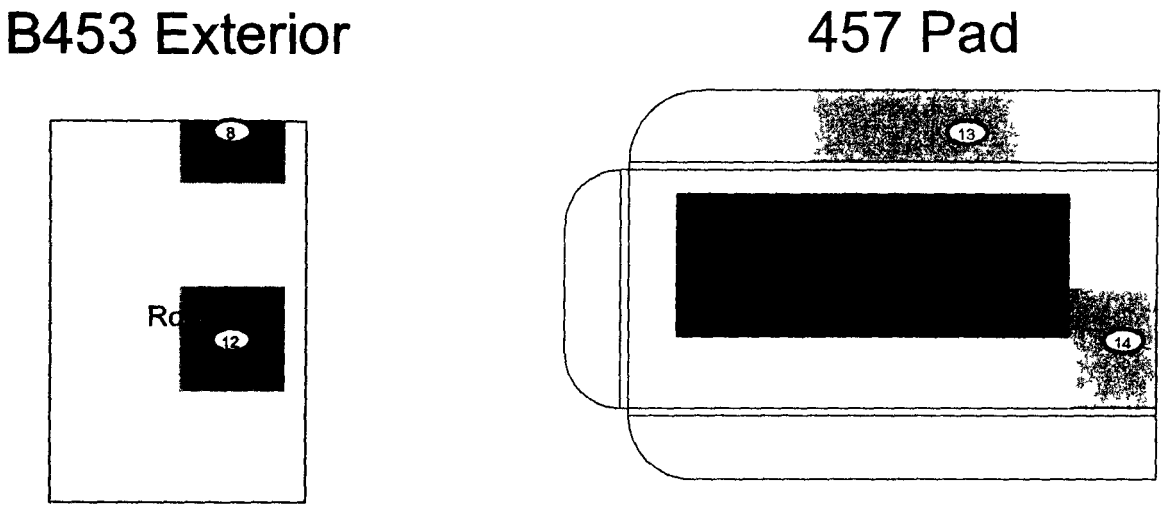
Detector Name BEGE4732

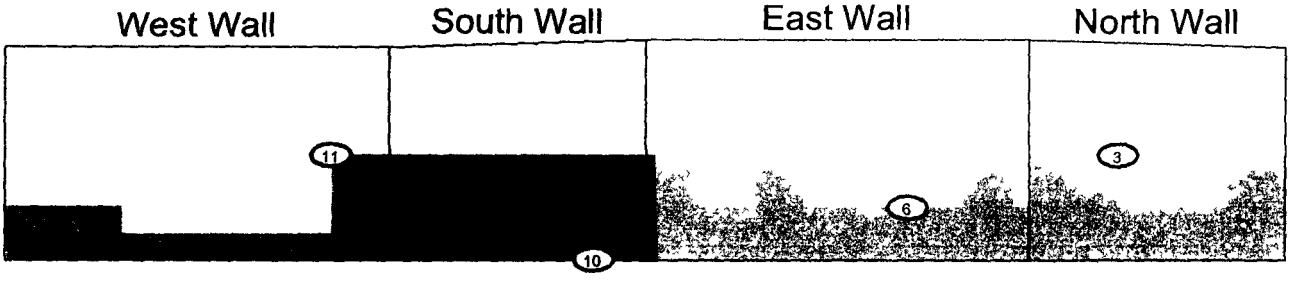
MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	5 73E+001	2 96E+000	3 39E+000
CS-137	2.04E-001	6 89E-002	1 60E-001
TL-208	8.65E-001	1 69E-001	2 66E-001
PO-210	2 21E+004	6 25E+003	1 43E+004
BI-212	2.05E+000	1 60E+000	2 67E+000
PB-212	2.01E+000	1 16E-001	1 77E-001
BI-214	1.24E+000	2 76E-001	4 58E-001
PB-214	8.95E-001	1 90E-001	3 47E-001
RA-226	0 00E+000	0 00E+000	3 06E+000
AC-228	2.60E+000	4 67E-001	8 25E-001
TH-230	0.00E+000	0 00E+000	1 77E+001
Th-231	1 04E+000	2 98E-001	6 67E-001
PA-234	0.00E+000	0 00E+000	2 40E-001
PA-234M	0 00E+000	0 00E+000	3 20E+001
U-235	8.96E-001	1 18E-001	1 90E-001
U238/234	5.22E+000	9 84E-001	8 05E-001
AM-241	0.00E+000	0 00E+000	1 96E-001

PRE-DEMOLITION SURVEY FOR 444 GROUP

Survey Area A **Survey Unit** 444-A-007 **Classification** 3
Building 453 & 457 Pad
Survey Unit Description Interior & Exterior
Total Area 353 sq m **Total Floor Area** 87 sq m
Total Roof Area 35 sq m





Scan Area

SURVEY MAP LEGEND
- (#) Smear & TSA Location
- (#) Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8
RCT ID #(s) 2, 4,

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DynCorp
THE ART OF TECHNOLOGY

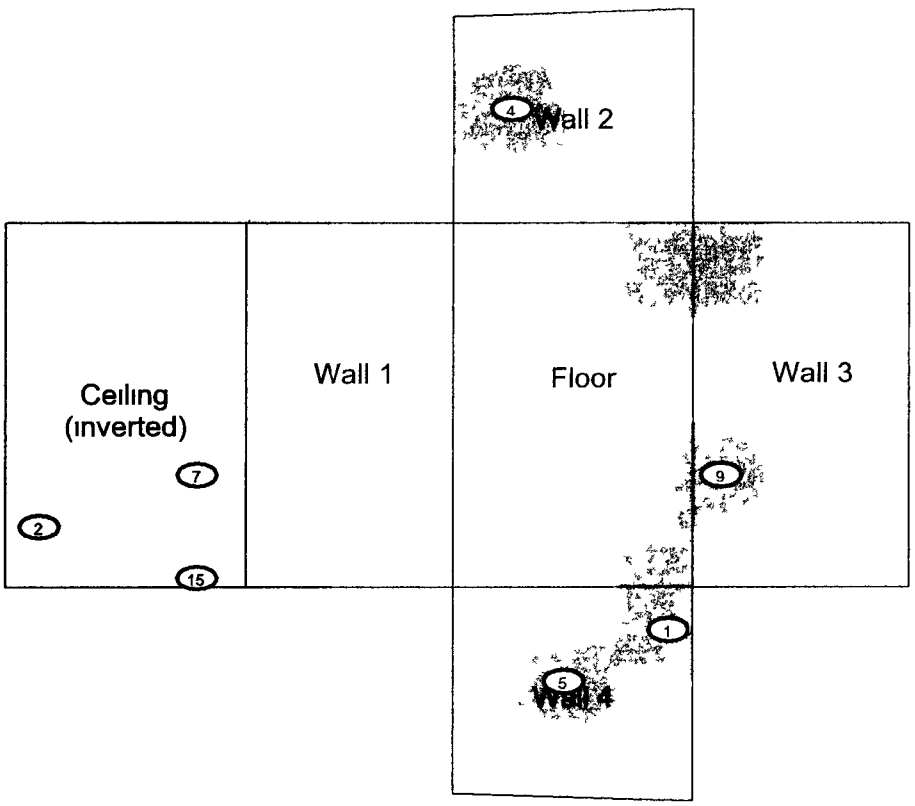
[redacted]

MAP ID 02-0222/453 EX-SC July 23, 2002

PRE-DEMOLITION SURVEY FOR 444 GROUP

Survey Area A **Survey Unit** 444-A-007 **Classification** 3
Building 453 & 457 Pad
Survey Unit Description Interior & Exterior
Total Area 353 sq m **Total Floor Area** 87 sq m
Total Roof Area 35 sq m

B453 Interior



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8
RCT ID #(s) 2, 4,

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-966 7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: [redacted]

MAP ID 02-0222/453-IN SC July 23, 2002

65

SURVEY UNIT 444-A-008
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B454 Cooling Tower

60

444-A-008
PDS Data Summary

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	0 6		dpm/100 cm^2
MAX[1]	160.3		dpm/100 cm^2
MEAN	39 1		dpm/100 cm^2
STD DEV	39 1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	0 3		dpm/100 cm^2
MAX	9 1		dpm/100 cm^2
MEAN	2 1		dpm/100 cm^2
STD DEV	3 2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

1 - A coupon sample was collected from location 7 and analyzed using the Canberra ISOCS system No americium or plutonium was detected. Sample activity was determined to be from uranium and naturally occuring isotopes The Sample Net Activity of 160 3 dpm/100cm^2 is below the DCGL$_W$ limits (5000 dpm/100cm2) for uranium All survey results are less than the applicable DCGLs, therefore, no further investigation is required

67

SURVEY UNIT 444-A-008
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra
Model	DP 6	DP 6	DP 6
Instrument ID#	7	8	9
Serial #	1249	1425	1379
Cal Due Date	*10/5/02*	*11/29/02*	*11/20/02*
Analysis Date	7/2/02	7/2/02	7/2/02
Alpha Eff (c/d)	0 207	0 222	0 202
Alpha Bkgd (cpm)	2 7	2 7	4 7
Sample Time (min)	1 5	1.5	1 5
LAB Time (min)	1 5	1.5	1 5
MDC (dpm/100cm^2)	48 0	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2]
1	9	4 0	19 8	5 3	26 2	0 1
2	7	10 0	48 3	2 0	9 7	28 4
3	7	4 0	19.3	2 7	13 0	0 6
4	9	11 3	55 9	6 7	33 2	36 1
5	9	12 0	59 4	4 7	23 3	39 5
6	9	16 0	79 2	6 7	33 2	59 3
7	8	40 0	180 2	2 7	12 2	160 3
8	7	12 0	58 0	2 0	9 7	38 1
9	9	6 7	33 2	6 0	29 7	13 3
10	9	8 0	39 6	2 7	13 4	19 7
11	7	10 0	48 3	4 0	19 3	28 4
12	8	20 7	93 2	3 3	14 9	73 4
13	7	8 0	38 6	2 0	9 7	18 8
14	9	14 0	69 3	5 3	26 2	49 4
15	9	8 7	43 1	5 0	24 8	23 2

19 9	Sample LAB Average
MIN	0 6
MAX	160 3
MEAN	39 1
SD	39 1
Transuranic DCGL$_w$	100

1 Average LAB used to subtract from Gross Sample Activity

2 A coupon sample was collected from location 7 and analyzed using the Canberra ISOCS system. No americium or plutonium was detected. Sample activity was determined to be from uranium and naturally occuring isotopes. The Sample Net Activity of 160 3 dpm/100cm^2 is below the DCGL$_w$ limits (5000 dpm/100cm2) for uranium. All survey results are less than the applicable DCGLs, therefore no further investigation is required

QC Measurements

10 QC	7	3 3	15 9	4 0	19 3	11 8
3 QC	9	13.3	65 8	7 3	36 1	38 1

27 7	QC LAB Average
MIN	11 8
MAX	38 1
MEAN	13 2
Transuranic DCGL$_w$	100

1 Average QC LAB used to subtract from Gross Sample Activity

68

SURVEY UNIT 444-A-008
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	1048	821
Cal Due Date	8/28/02	12/9/02
Analysis Date	7/2/02	7/2/02
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 0	0 1
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	4 5	7 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	3 0	9 1
2	2	1 0	2 7
3	1	0 0	0 0
4	2	1 0	2 7
5	1	2 0	6 1
6	2	0 0	-0 3
7	1	0 0	0 0
8	2	0 0	0 3
9	1	0 0	0 0
10	2	2 0	5 8
11	1	2 0	6 1
12	2	0 0	-0 3
13	1	0 0	0 0
14	2	0 0	-0 3
15	1	0 0	0 0
		MIN	-0 3
		MAX	9 1
		MEAN	2 1
		SD	3 2
		Transuranic DCGL$_W$	**20**

Analysis Results Header 8/15/2002 10 55 50 AM Page 1

****
***** GAMMA SPECTRUM ANALYSIS *****
** Canberra Mobile Laboratory Services **
****

Report Generated On 8/15/2002 10 55 50 AM

RIN Number · 02S0210
Analytical Batch ID · 0208124732
Line Item Code RC10B019

Filename A.\G1900051 CNF

Sample Number : 02S0210-018 001
Lab Sample Number · CMLS-1592
Sample Receipt Date · 8/12/2002
Sample Volume Received 1 05E+002 Grams

Result Identifier : N/A

Peak Locate Threshold : 3 00
Peak Locate Range (in channels) 100 - 8192
Peak Area Range (in channels) . 100 - 8192
Identification Energy Tolerance . 1.000 keV

Sample (Final Aliquot Size) · 1 051E+002 Grams
Sample Quantity Error 0.000E+000
Systematic Error Applied · 0 000E+000

Sample Taken On : 8/09/2002 2 45 00 PM
Acquisition Started · 8/13/2002 11 46 33 AM

Count Time 3600 0 seconds
Real Time . 3602.8 seconds
Dead Time 0 08 %

Energy Calibration Used Done On . 7/01/02
Energy = -0.102 + 0.250*ch + -3.87E-008*ch^2 + 2 95E-012*ch^3

Corrections Applied.
None

Efficiency Calibration Used Done On · 8/13/02
Efficiency Geometry ID · 02S0210-018 001

Analyzed By Marilyn Umbaugh Date 8/15/02

Reviewed By: Larry Umbaugh Date 8/15/02

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 02S0210-018 001

Analytical Batch ID 0208124732

Sample Type (Result Identifier) G19

Lab Sample Number CMLS-1592

Geometry ID 02S0210-018 001

Filename A.\G1900051.CNF

Detector Name. BEGE4732

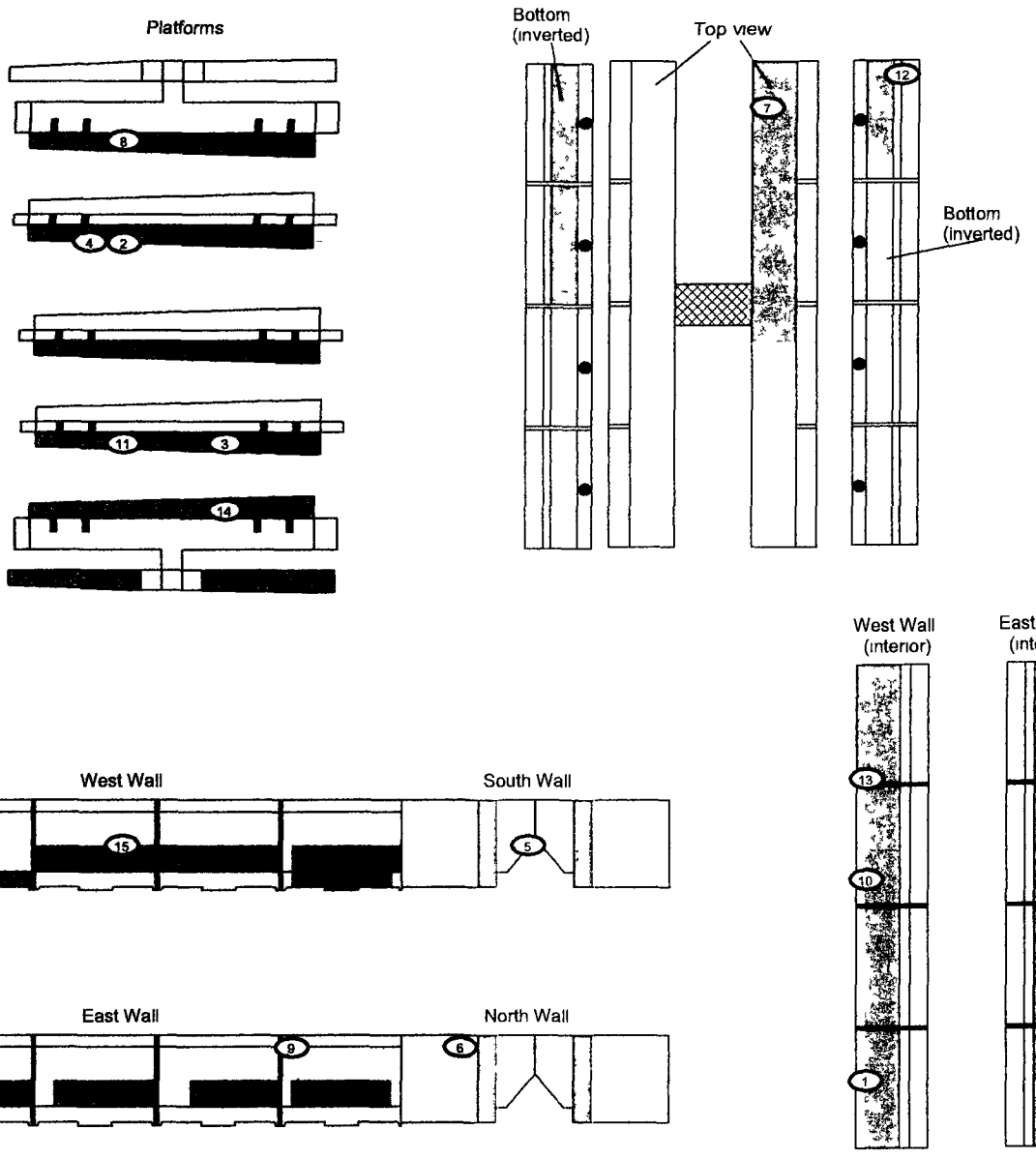
MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	5 80E+000	1 94E+000	2 60E+000
CS-137	0.00E+000	0 00E+000	2 18E-001
TL-208	0.00E+000	0 00E+000	2 16E-001
PO-210	0 00E+000	0 00E+000	1 95E+004
BI-212	0 00E+000	0 00E+000	3 08E+000
PB-212	0 00E+000	0 00E+000	2 46E-001
BI-214	4 03E-001	1 91E-001	2 79E-001
PB-214	0.00E+000	0 00E+000	4 07E-001
RA-226	0 00E+000	0 00E+000	3 22E+000
AC-228	0 00E+000	0 00E+000	8 61E-001
TH-230	0 00E+000	0 00E+000	3 65E+001
Th-231	0.00E+000	0 00E+000	1 51E+000
PA-234	0 00E+000	0 00E+000	2 94E-001
PA-234M	0 00E+000	0 00E+000	2 53E+001
U-235	0.00E+000	0 00E+000	1 97E-001
U238/234	2 44E+000	9 33E-001	1 37E+000
AM-241	0 00E+000	0 00E+000	4 94E-001

PRE-DEMOLITION SURVEY FOR 444 GROUP TYPE 1 FACILITIES

Survey Area A **Survey Unit 444-A-008** **Classification 3**
Building 454 Cooling Tower
Survey Unit Description Interior & Exterior
Total Area 362 sq m **Total Floor Area N/A sq m**

454 Cooling Tower



Scan Area

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 7, 8, 9
RCT ID #(s) 2, 3, 4

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-966 7707 Prepared for

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL

MAP ID 02-0222/454-SC July 9, 2002

ATTACHMENT D

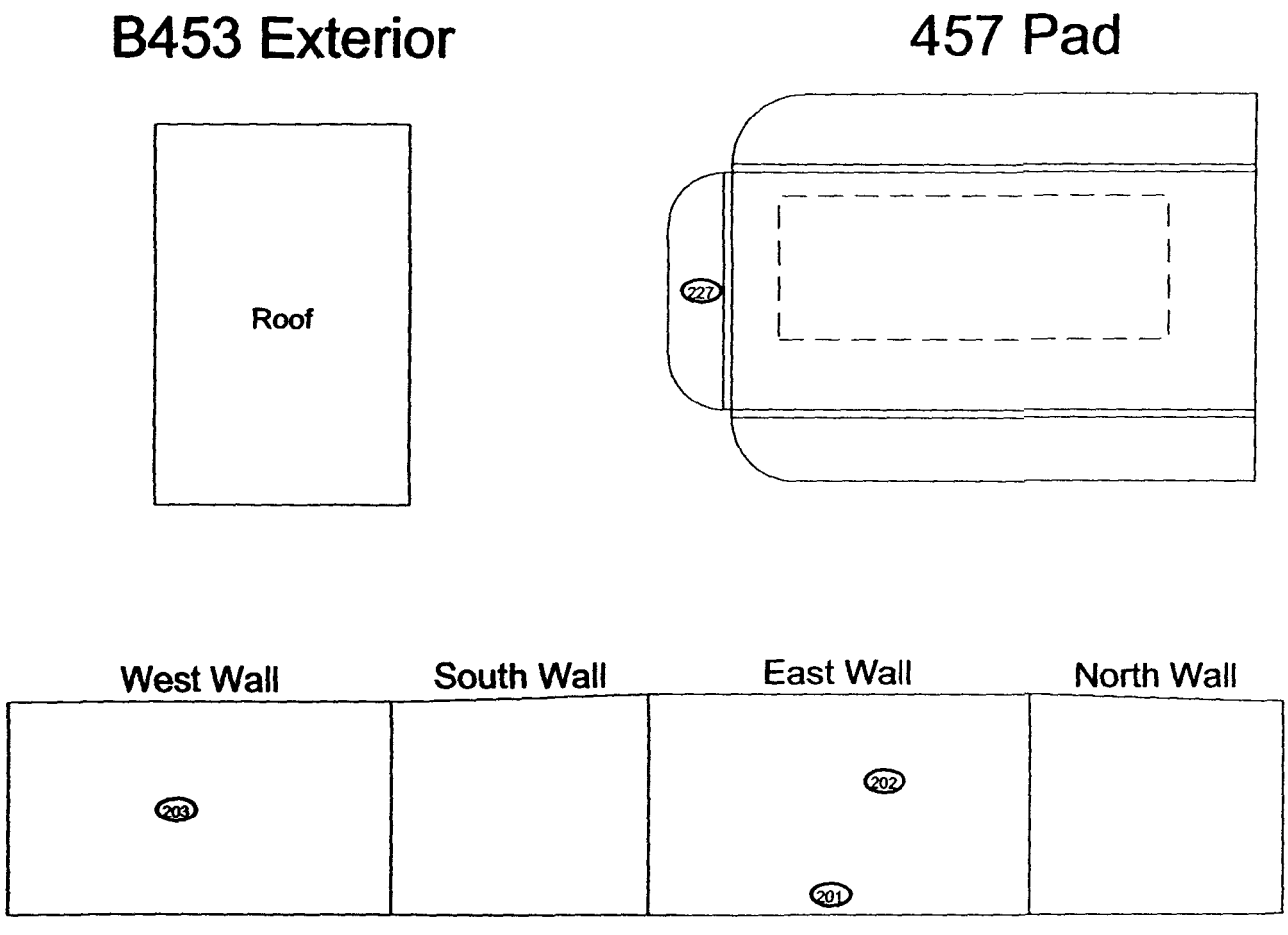
Chemical Data Summaries and Sample Maps

Asbestos Data Summary

Sample Number	Map Survey Point Location	Material Sampled & Location	Analytical Results
		Building 453	
453-04082002-315-201	201	Tan paint & white plaster on CMU wall, exterior east wall	None Detected
453-04082002-315-202	202	Tan paint & white plaster on CMU wall, exterior east wall	None Detected
453-04082002-315-203	203	Tan paint & white plaster on CMU wall, exterior west wall	None Detected
		457	
457-04082002-315-227	**227**	**Cooling Tower – Pipe caulking at east wall**	**15% Chrysotile**
		449	
449-04082002-3155-204	204	Main Room – Gray window caulking, west window south wall	None Detected
449-04082002-315—205	205	Main Room – Gray window caulking, east window south wall	None Detected
		427	
427-04082002 315-206	206	Main Room – White paint on CMU, west wall	None Detected
427-04082002-315-207	207	Main Room – White paint on CMU, east wall	None Detected
427-04082002-315-208	208	Main Room – White paint on CMU, south wall	None Detected
427-04082002-315-209	209	Main Room – White paint on concrete, north wall	None Detected
427-04082002-315-210	210	Main Room - White paint on concrete south wall	None Detected
427-04082002 315 211	211	Main Room – White paint on concrete east wall	None Detected
427 04082002 315 212	212	Main Room – White TSI "T' above generator 2' OD	None Detected
427 04082002 315-213	213	Main Room – White TSI horizontal pipe run above generator 2 OD	None Detected
427 04082002 315-214	214	Main Room – White TSI elbow top of generator 2 OD	None Detected
427 04082002 315 215	215	White paint on CMU west exterior wall	None Detected
427 04082002 315-216	216	White paint on CMU, south exterior wall	None Detected
427 04082002-315-217	217	White paint on CMU, south exterior wall	None Detected
		449C	
449C 04082002 315 218	218	Main Room – White troweled on texture on drywall, south wall	None Detected
449C-04082002 315 219	219	Main Room – White troweled on texture on drywall south wall	None Detected
449C 04082002 315 220	220	Main Room – White troweled on texture on drywall with joint compound, east wall	None Detected
		449A	
449A 04082002-315-221	221	Main Room – 12' x 12" white & gray vinyl floor tile with yellow paint	None Detected
449A 04082002 315-222	222	Main Room – Drywall & joint compound southeast corner	None Detected
449A 04082002 315-223	223	Main Room – Drywall, west wall	None Detected
		S449	
S449 04082002-315 224	224	White composite tar shingle interior roof	None Detected
S449 04082002-315 225	225	White composite tar shingle, exterior roof	None Detected
		454	
454 04082002 315 226	226	Cooling Tower – Black tar waterproofing on elbow	None Detected

CHEMICAL SAMPLE MAP

Building: 453 Exterior & 457 Pad Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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Prepared for:

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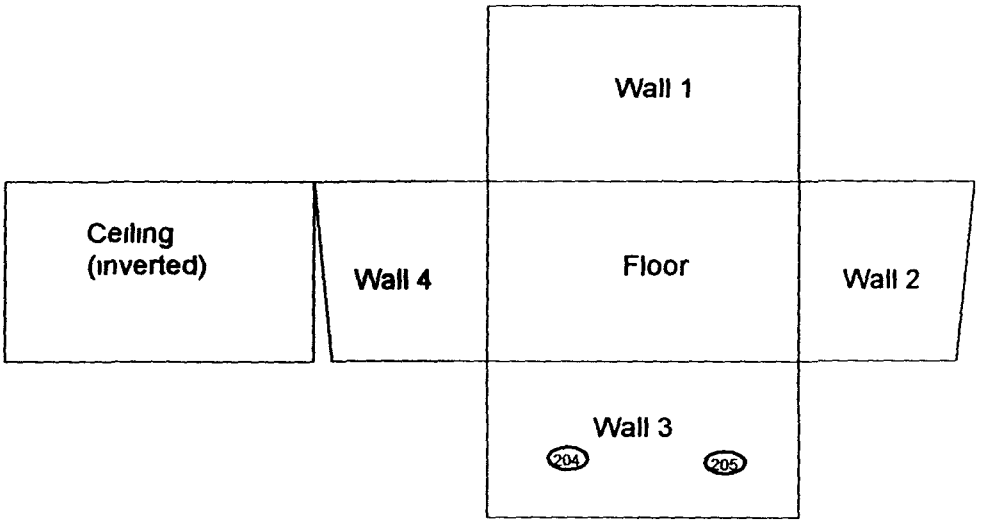
MAP ID 02-0222/B453-EXT-ASB2 July 16, 2002

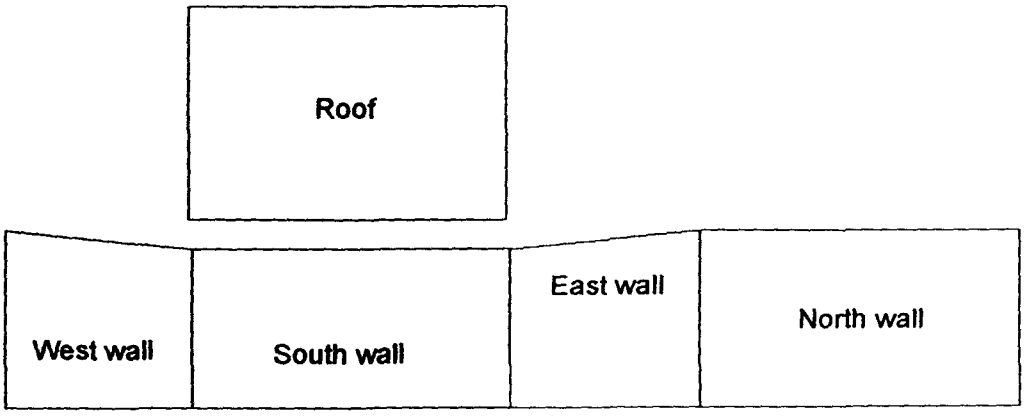
CHEMICAL SAMPLE MAP

Building: 449 Interior & Exterior

449 Interior



449 Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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April 17, 2002

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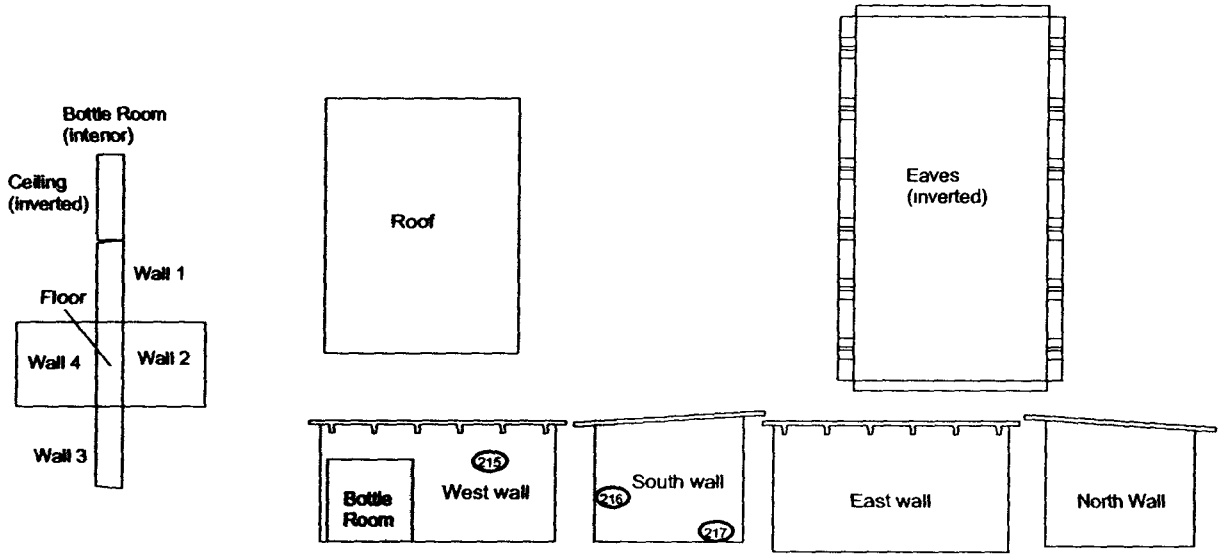
CHEMICAL SAMPLE MAP

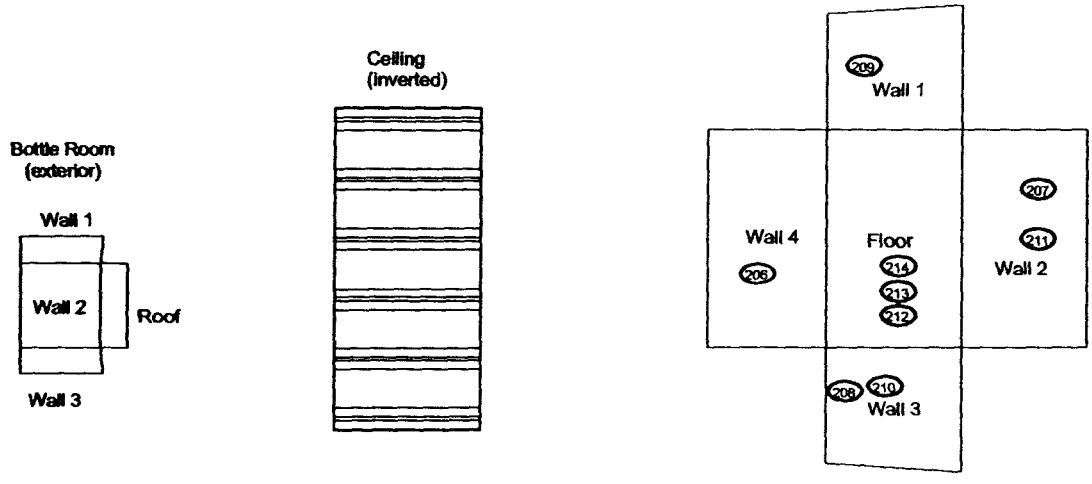
Building: 427 Interior & Exterior

427 Generator Bldg

427 Exterior



427 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area to Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m

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MAP ID 02-0222/B427-ASB

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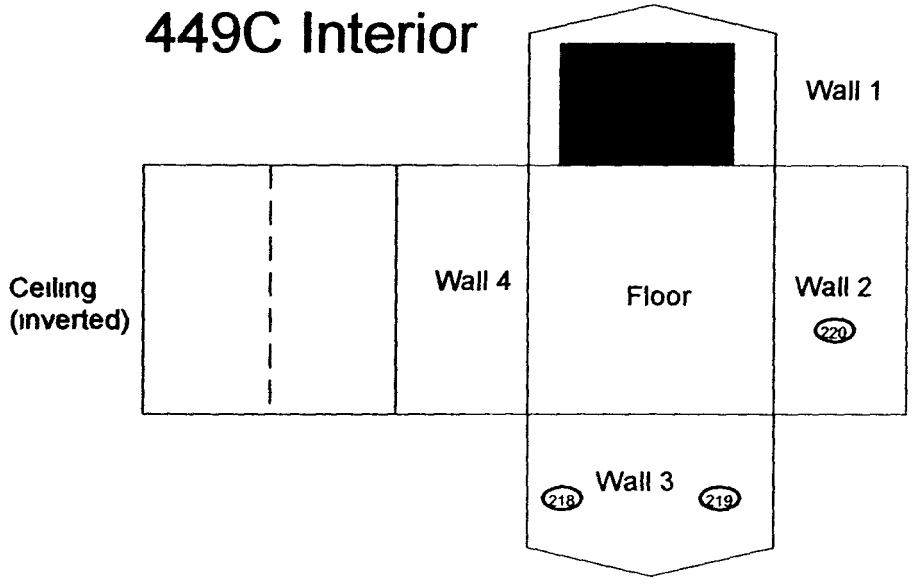
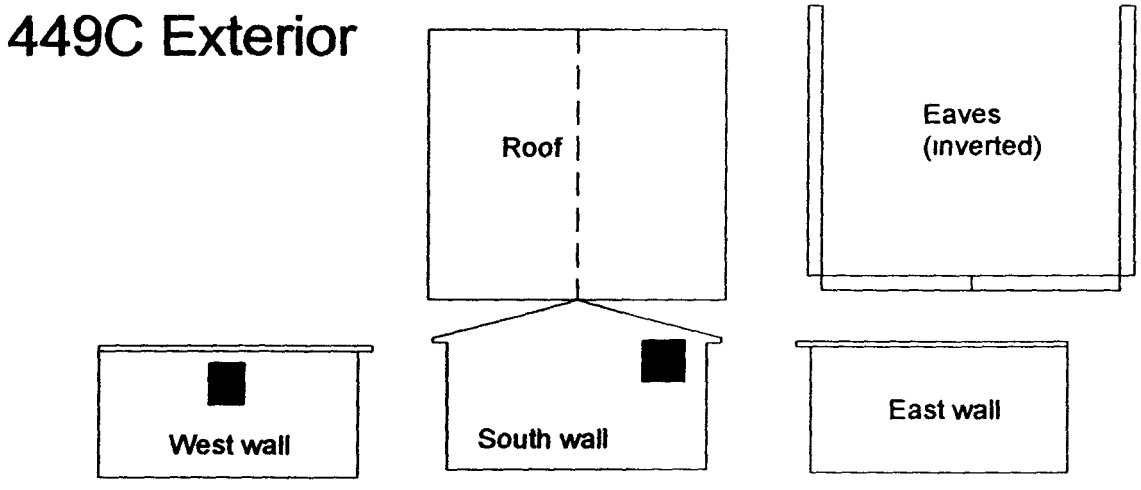
CHEMICAL SAMPLE MAP

Building: 449C Interior & Exterior





SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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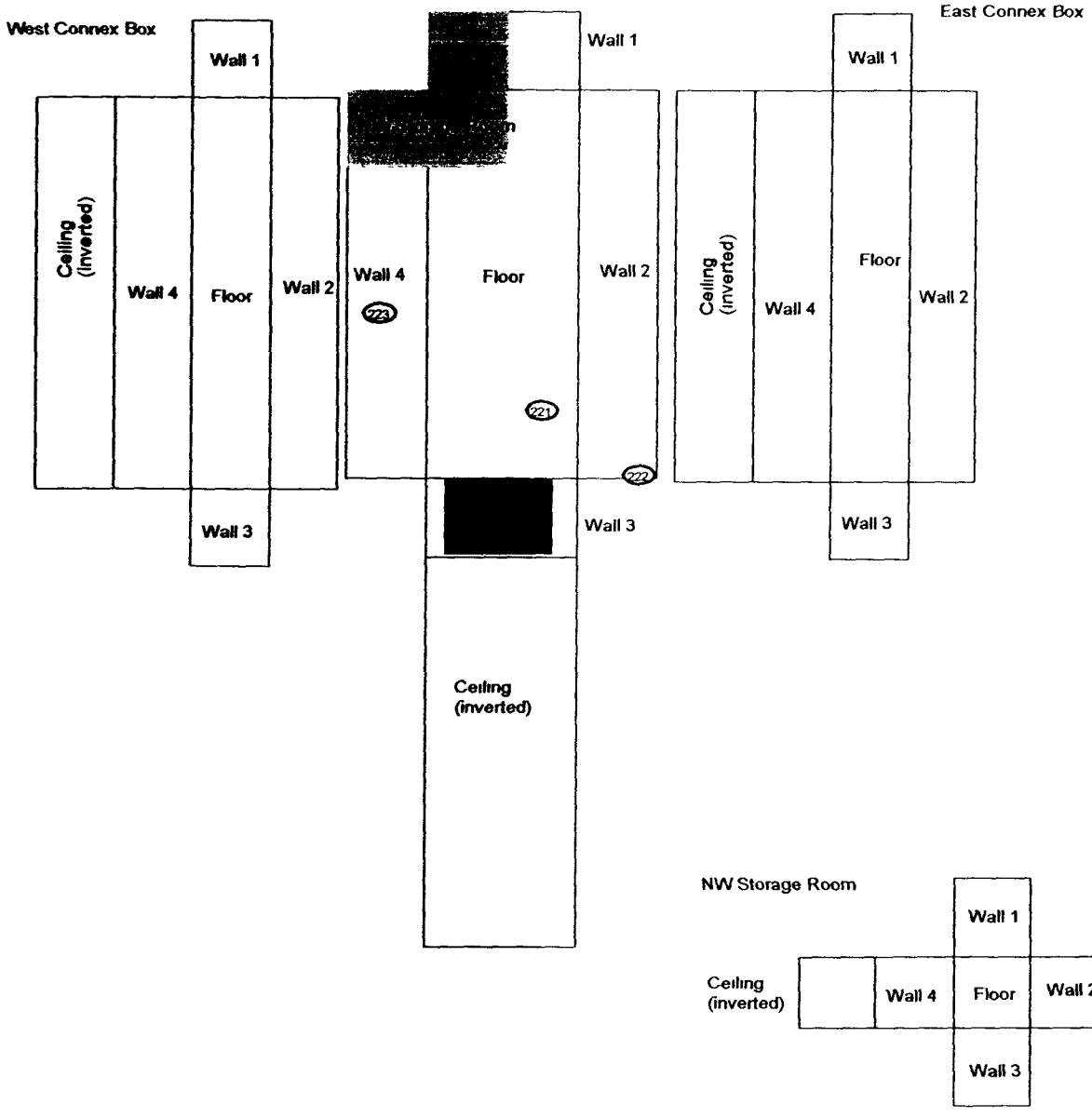
April 17, 2002

CHEMICAL SAMPLE MAP

Building: 449A Interior

449A Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

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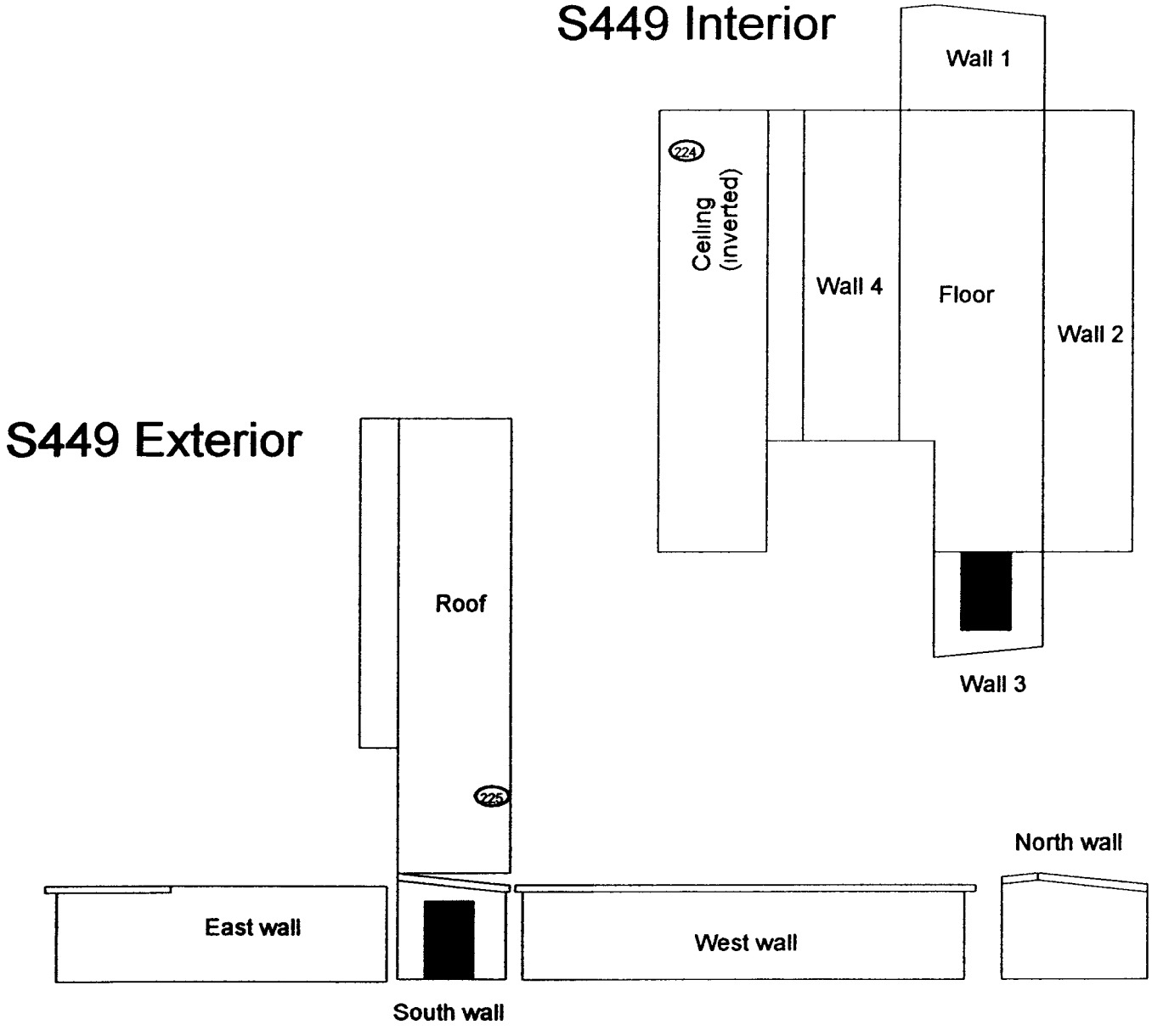
CHEMICAL SAMPLE MAP

Building S449 Exterior & Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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July 17, 2002

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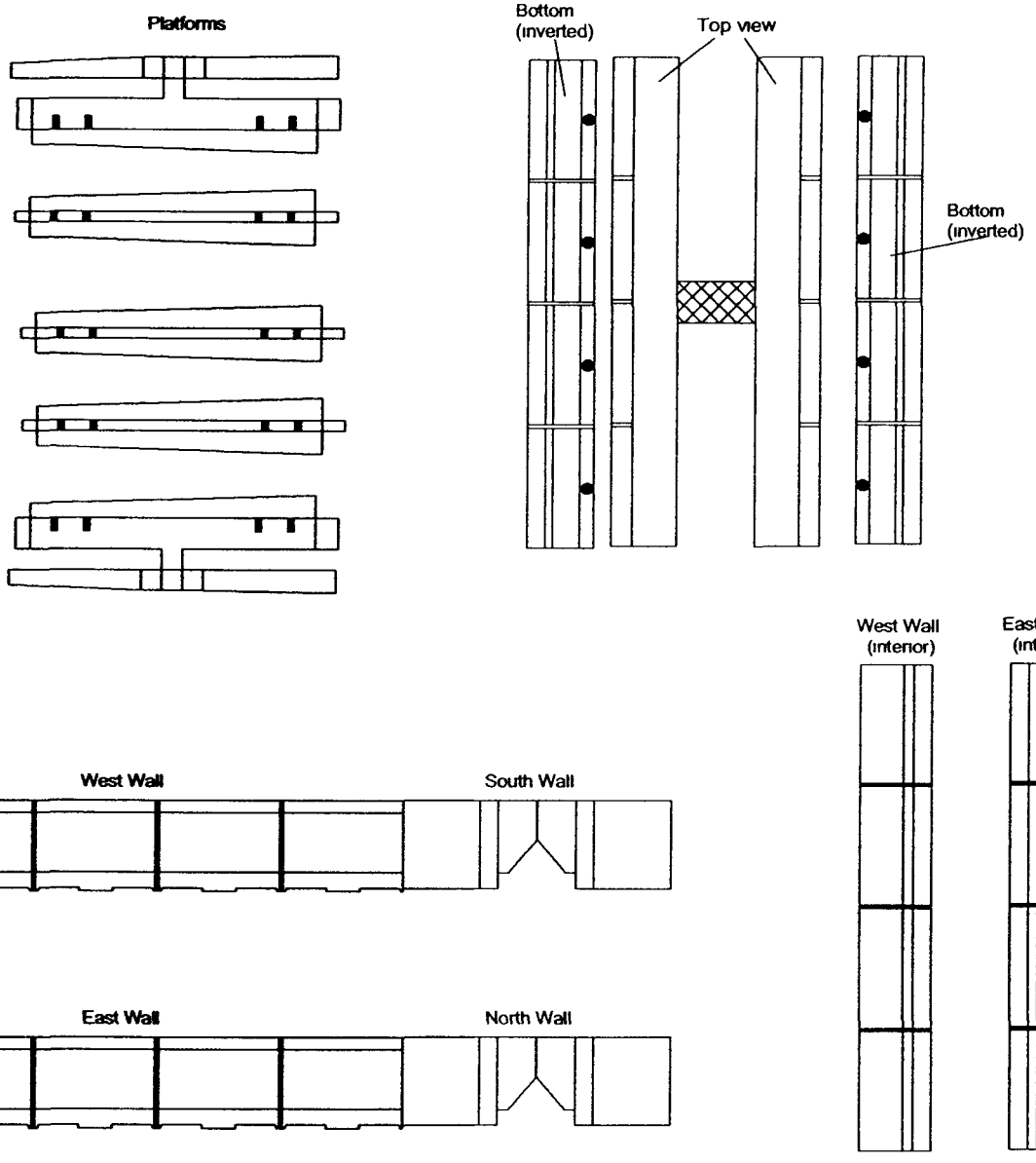
CHEMICAL SAMPLE MAP

Building: 454 Cooling Tower

454 Cooling Tower



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

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Prepared for:

MAP ID 02-0222/B454-ASB

April 17, 2002

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Beryllium Data Summary

Sample Number	Map Survey Point Location	Sample Location	Result ($\mu g/100\ cm^2$)
Building 427			
427-04082002-315-101	101	Main Room – Top of "Generator Main Breaker", west wall	< 0 1
427-04082002-315-102	102	Main Room – Top of metal louvered window, south wall	< 0 1
427-04082002-315-103	103	Main Room – Top of alarm, west wall	< 0 1
427-04082002-315-104	104	Main Room – Top of sheet metal exhaust cone, north wall	< 0 1
427-04082002-315-105	105	Main Room – Horizontal "gutter" of sheet metal exhaust cone, north wall	< 0 1
449C			
449C-04082002-315-115	115	Main Room – Top of electrical outlet strip, east wall	< 0 1
449C-04082002-315-116	116	Main Room – Top of vinyl floor tiles, middle of room	< 0 1
449C-04082002-315-117	117	Main Room – Wooden shelf/window, south wall	< 0 1
449C-04082002-315-118	118	Main Room – Top of glass and metal storage cabinet, south wall	< 0 1
449C-04082002-315-119	119	Main Room – Top of electrical outlet strip, west wall	< 0 1
S449			
S449-04082002-315-121	121	Shed – Top of horizontal 4" x 4"	< 0 1
S449-04082002-315-122	122	Shed – Top of east wall, top plate	< 0 1
S449-04082002-315-123	123	Shed – Top of wooden shelf	< 0 1
S449-04082002-315-124	124	Shed – Top of 2" x 10"	< 0 1
S449-04082002-315-125	125	Shed – Top of 4' x 4'	< 0 1
453			
453-04082002-315-126	**126**	**Main Room – Concrete floor, west wall**	**0 300**
453-04082002-315-127	127	Main Room – Top of electrical junction box, east wall	< 0 1
453-04082002-315-128	128	Main Room – Top of LR453 breaker box	< 0 1
453-04082002-315-129	129	Main Room – Concrete floor, SW corner	< 0 1
453-04082002-315-130	**130**	**Main Room – Bottom edge of north roll-top door**	**0 223**
454			
454-04082002-315-131	131	Cooling Tower – Bottom of concrete basin, middle	< 0 1
454-04082002-315-132	132	Cooling Tower – Bottom of concrete basin, middle	< 0 1
454-04082002-315-133	133	Cooling Tower – Edge of louvers, east wall	< 0 1
454-04082002-315-134	134	Cooling Tower – Sediment in tray below louvers, east wall	< 0 1
454-04082002-315-135	135	Cooling Tower – Dust on horizontal pipe run, east side	< 0 1
457			
457-04082002-315-136	136	Cooling Tower – Top of louvers top view	< 0 1
457-04082002-315-137	137	Cooling Tower – Horizontal edge of I-beam, north bottom	< 0 1
457-04082002-315-138	138	Cooling Tower – Top of 313-035 electrical box	< 0 1
457 04082002-315-139	139	Cooling Tower – Horizontal edge of sheet metal seam, east wall	< 0 1
457 04082002-315-140	140	Cooling Tower – Side of galvanized jacket over valve, east wall	< 0 1

449A			
449A-04082002-315-111	111	NW Storage – Top of LP449 electrical breaker box	< 0 1
449A-04082002-315-112	112	Main Room – Top of speaker, east wall	< 0 1
449A-04082002-315-113	113	Main Room – Top of vinyl floor tiles, middle of room	< 0 1
449A-04082002-315-114	114	Mobile Storage (East) – Top of middle metal shelf, east wall	< 0 1
449A-04082002-315-120	**120**	**West Mobile Storage – Top of locker, west wall**	**31 7**
Additional Beryllium Smears taken in 449A after initial RLC Characterization (No Map Available)			
449A-05012002-601-001	N/A	Room 1 – On floor, north doorway to outside	< 0 1
449A-05012002-601-002	N/A	Tack Room – On floor in doorway in tack room	< 0 1
449A-05012002-601-003	N/A	Tack Room – On shelves in tan cabinet	< 0 1
449A-05012002-601-004	N/A	Room 1 – On cabinet on NE wall	< 0 1
449A-05012002-601-005	N/A	**Room 1 – On floor, north end of room**	**0.3330**
449A-05012002-601-006	N/A	Room 1 – On shelf in lag bolts cabinet	< 0 1
449A-05012002-601-007	N/A	Room 1 – On shelf in drywall screws cabinet	< 0 1
449A-05012002-601-008	N/A	Room 1 – On shelf in concrete tools cabinet	< 0 1
449A-05012002-601-009	N/A	Room 1 – On shelf in caulk cabinet	< 0 1
449A-05012002-601-010	N/A	Room 1 – On shelf in glue, staples cabinet	< 0 1
449A-05012002-601-011	N/A	Room 1 – On shelf in sandpaper, tools cabinet	< 0 1
449A-05012002-601-012	N/A	Room 1 – On shelf in hand tools cabinet	< 0 1
449A-05012002-601-013	N/A	Room 1 – On floor, center of room	< 0 1
449A-05012002-601-014	N/A	Room 1 – On floor in front of SE door	< 0 1
449A-05012002-601-015	N/A	Cargo – On floor into east cargo container	< 0 1
449A-05012002-601-016	N/A	Cargo – On floor, center section of east cargo container	< 0 1
449A-05012002-601-017	N/A	Cargo – On east shelf in east cargo container	< 0 1
449A-05012002-601-018	N/A	Cargo – On west shelf in east cargo container	< 0 1
449A-05012002-601-019	N/A	Cargo – On south west shelf in east cargo container	< 0 1
449A-05012002-601-020	N/A	Room 1 – On floor on ramp	< 0 1
Investigative Beryllium Smears taken in 449A, regarding elevated Sample #: 449A-05012002-601-005 (No Map Available)			
449A-05092002-601-101	N/A	Room 1 – On floor northwest corner of room	< 0 1
449A-05092002-601-102	N/A	Room 1 – On floor northeast corner of room	< 0 1
449A-05092002-601-103	N/A	Room 1 – On floor along east wall	< 0 1
449A-05092002-601-104	N/A	Room 1 – On floor along west wall	< 0 1
449A-05092002-601-105	N/A	Room 1 – On floor along east wall	< 0 1
449A-05092002-601-106	N/A	Room 1 – On floor to doorway to Tack room	< 0 1
449A-05092002-601-107	N/A	Room 1 – On floor, center	< 0 1
449A-05092002-601-108	N/A	Room 1 – On green jack stands	< 0 1
449A-05152002-601-124	N/A	Room 1 – In mop bucket	< 0 1
449A-05152002-601-125	N/A	Room 1 – On floor under mop bucket	< 0 1

Additional Biased Beryllium Smears taken in 449A			
449A-08142002-315-101	101	Main Room -- Top of AT&T Data Phone cabinet, south wall	< 0 1
449A-08142002-315-102	102	Main Room – Top of Exit sign, SE entrance	< 0 1
449A-08142002-315-103	103	Main Room – Top of Electro Mode heater, ceiling	< 0 1
449A-08142002-315-104	104	East Connex – Top shelf, east shelves	< 0 1
449A-08142002-315-105	105	East Connex – On floor under west shelves	< 0 1
449A-08142002-315-106	106	Main Room – On tile floor, NW corner	< 0 1
449A-08142002-315-107	107	NW Storage – On ledge of exhaust fan	< 0 1
449A-08142002-315-108	108	Main Room – On wooden shelf, east wall	< 0 1
449A-08142002-315-109	109	NW Storage – On tile floor, middle of room	< 0 1
449A-08142002-315-110	110	Main Room – Top of Electro Mode heater, ceiling	< 0 1
449A-08142002-315-111	111	East Connex – Second metal shelf, west wall	< 0 1
449A-08142002-315-112	112	East Connex – Top metal shelf, west wall	< 0 1
449A-08142002-315-113	113	East Connex – Top metal shelf, east wall north end	< 0 1
449A-08142002-315-114	114	East Connex – On floor under east shelving	< 0 1
449A-08142002-315-115	115	East Connex – Second metal shelf, west wall	< 0 1
449A-08142002-315-116	116	Main Room – On tile floor, west side	< 0 1
449A-08142002-315-117	117	Main Room – On work counter, east wall	< 0 1
449A-08142002-315-118	118	Main Room – On tile floor	< 0 1
449A-08142002-315-119	119	Main Room – On second shelf, west wall	< 0 1
449A-08142002-315-120	120	Main Room – On tile floor, SW corner	< 0 1
449			
449-04082002-315-106	106	Main Room – Top of "Respirators Only" cabinet, west wall	< 0 1
449-04082002-315-107	107	Main Room – West window ledge, south wall	< 0 1
449-04082002-315-108	**108**	**Main Room – Top of "Tools" cabinet, east wall**	**0 103**
449-04082002-315-109	109	Main Room – Top of east window, south wall	< 0 1
449-04082002-315-110	110	Main Room – Top of electrical re-charger, south wall	< 0 1
Investigative Beryllium Smears taken in 449, regarding elevated Sample #: 449-04082002-315-108			
449-04182002-315-146	146	Main Room – On concrete floor in front of "Tool" cabinet	< 0 1
449-04182002-315-147	**147**	**Main Room – On second metal shelf from the top inside "tool" cabinet**	**0 181**
449-04182002-315-148	148	Main Room – On east window ledge, south wall	< 0 1
449-04182002-315-149	**149**	**Main Room – On top of "Tool" cabinet, east wall**	**0 495**
Investigative Beryllium Smears taken in 449, regarding elevated Samples #: 449-04182002-315-147 and 149			
449-09032002-213-101	101	At Doorway	< 0 1
449-09032002-213-102	102	North side, middle, west	< 0 1
449-09032002-213-103	103	North side, middle east	< 0 1
449-09032002-213-104	104	North side, under BE contaminated cabinet, east	< 0 1
449-09032002-213-105	105	Radiator, east wall	< 0 1
449-09032002-213-106	106	Radiator, south wall	< 0 1
449-09032002-213-107	107	South side, middle, east	< 0 1
449-09032002-213-108	108	South side, middle, west	< 0 1

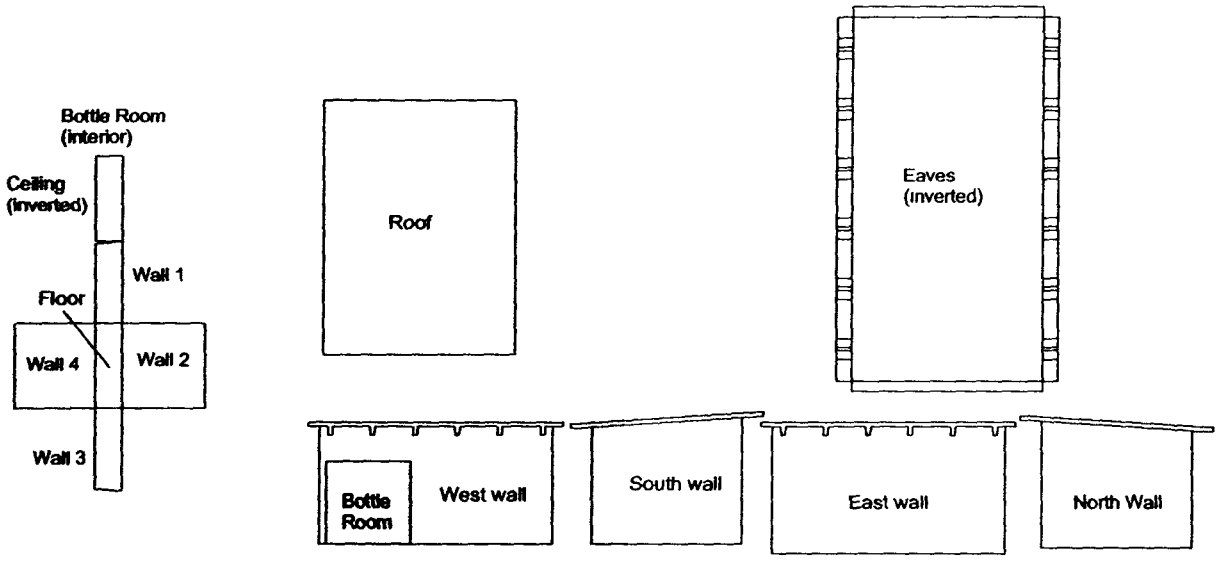
449-09032002-213-109	109	Radiator, west wall	< 0 1
449-09032002-213-110	**110**	**Inside and top of respirator cabinet**	**< 0 299**
449-09032002-213-111	111	East window sill	< 0 1
449-09032002-213-112	112	West window sill	< 0 1
449-09032002-213-113	113	Vents near bottom of south wall	< 0 1
449-09032002-213-114	114	Overhead garage door tracks, west side	< 0 1
449-09032002-213-115	115	Overhead garage door tracks, east side	< 0 1
449-09032002-213-116	116	Top of garage door, north wall	< 0 1
449-09032002-213-117	117	Overhead conduit and speaker	< 0 1
449-09032002-213-118	118	Overhead conduit, west wall	< 0 1
449-09032002-213-119	119	Conduit and plugs, center of south wall	< 0 1
449-09032002-213-120	120	Fire extinguisher top/sides	< 0 1
Investigative Beryllium Smears taken in 449 after removal of Respirator Cabinet (see Map 2 attached)			
449-09112002-603-001	**NE Corner**	**On concrete floor**	**0 112**
449-09112002-603-002	SE Corner	On concrete floor	< 0 1
449-09112002-603-003	Middle of Room	On concrete floor	< 0 1
449-09112002-603-004	NW Corner	On concrete floor	< 0 1
449-09112002-603-005	SW Corner	On concrete floor	< 0 1
Final Investigative Beryllium Smears taken in 449 regarding elevated Sample #: 449-09112002-603-001			
449-09122002-315-201	201	On concrete floor in NE corner	< 0 1
449-09122002-315-202	202	On concrete floor in NE corner	< 0 1
449-09122002-315-203	203	On concrete floor in NE corner	< 0 1
449-09122002-315-204	204	On concrete floor in NE corner	< 0 1

CHEMICAL SAMPLE MAP

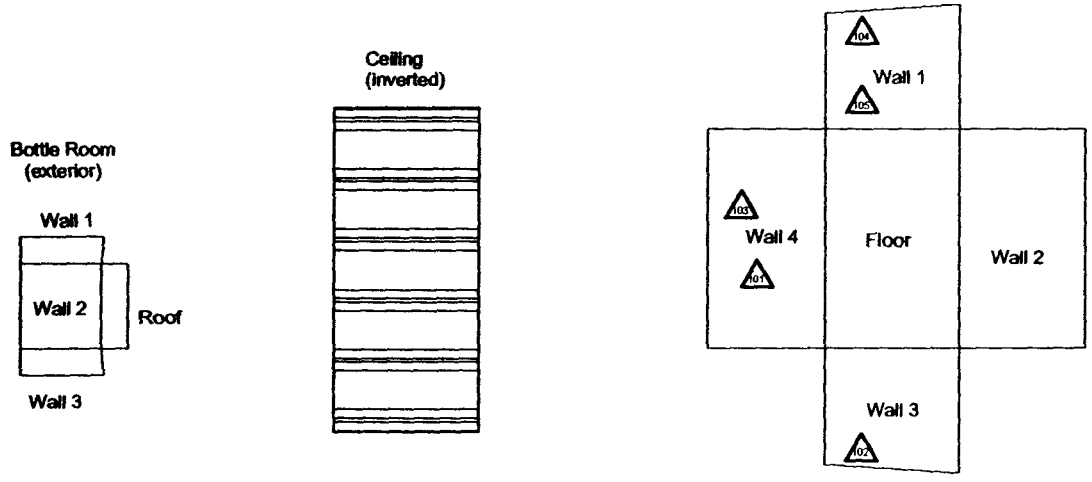
Building: 427 Interior & Exterior

427 Generator Bldg

427 Exterior



427 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m

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Prepared for

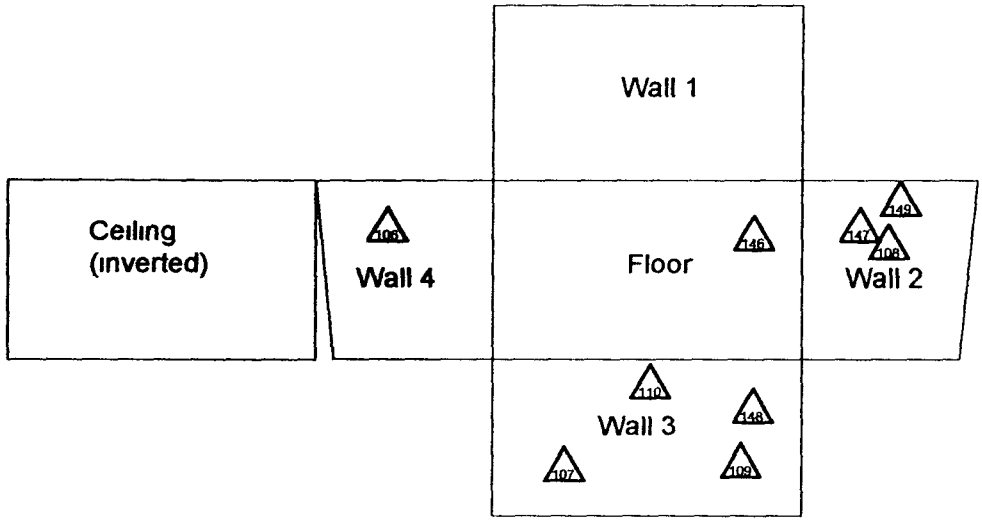
MAP ID 02-0222/427-BE

April 16, 2002

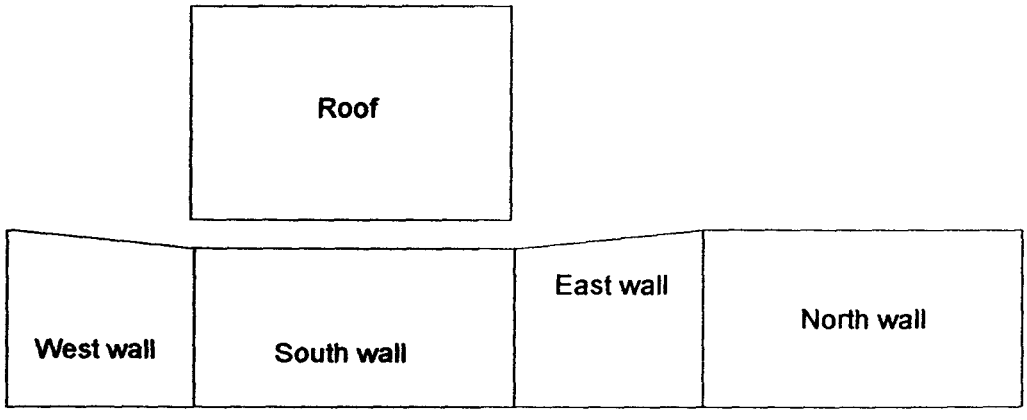
CHEMICAL SAMPLE MAP

Building: 449 Interior & Exterior

449 Interior



449 Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
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- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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Prepared for:

MAP ID 02-0222/449-BE

July 17, 2002

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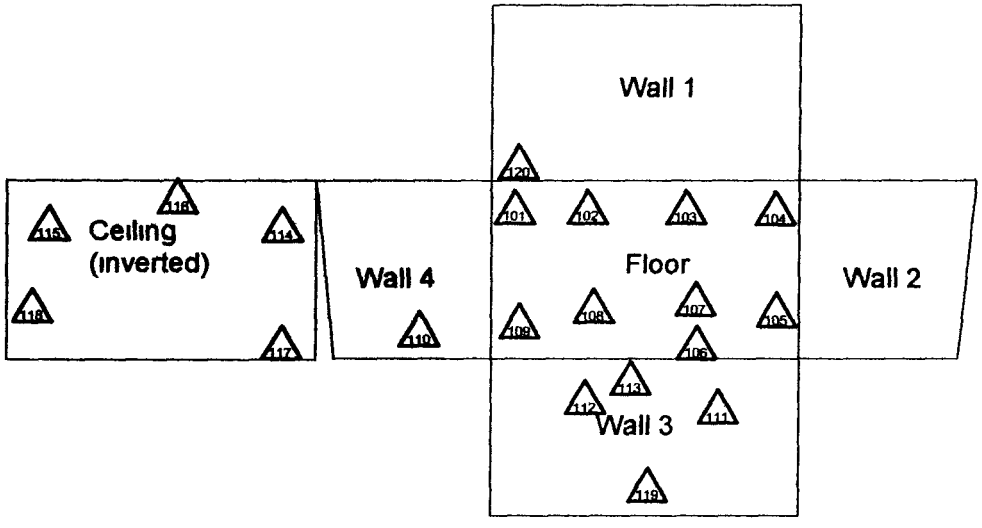
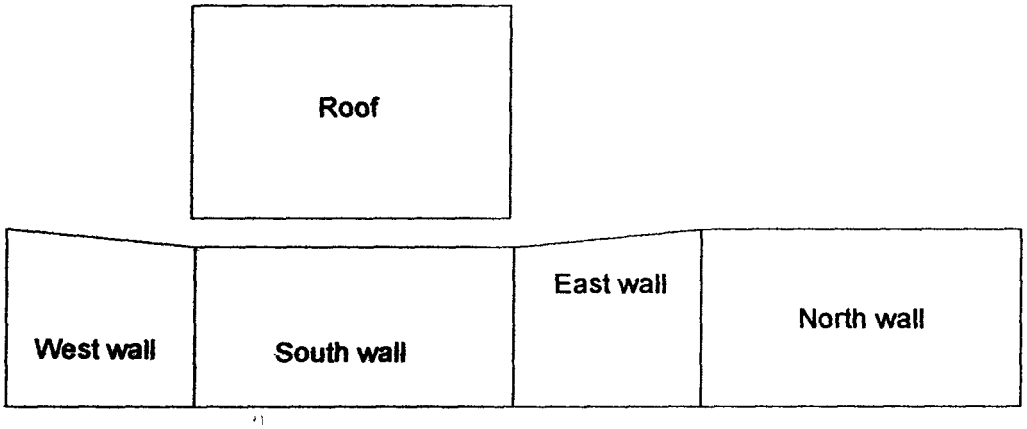
CHEMICAL SAMPLE MAP

Building: 449 Interior & Exterior

449 Interior



449 Exterior



SURVEY MAP LEGEND

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- Open/Inaccessible Area
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N

0 FEET 15

0 METERS 5

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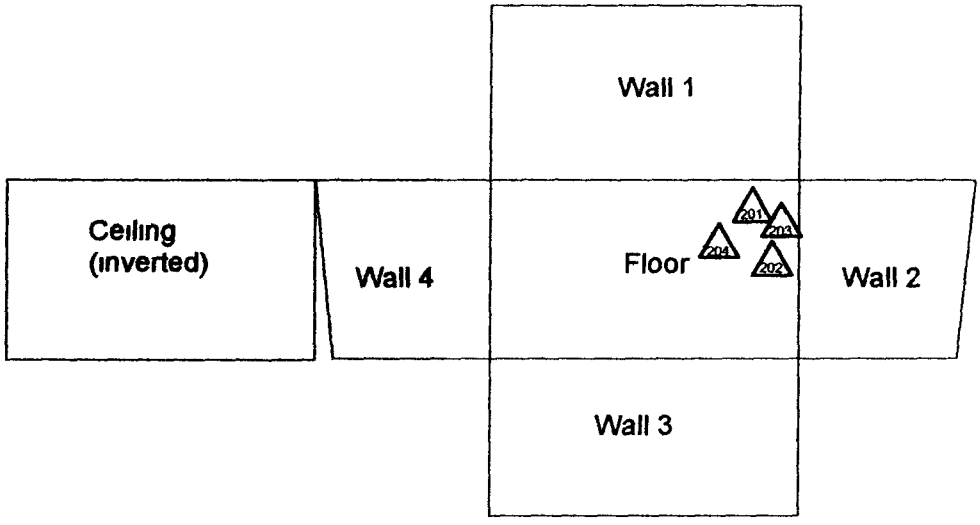
Prepared for

MAP ID 02-0222/449-CHM September 4, 2002

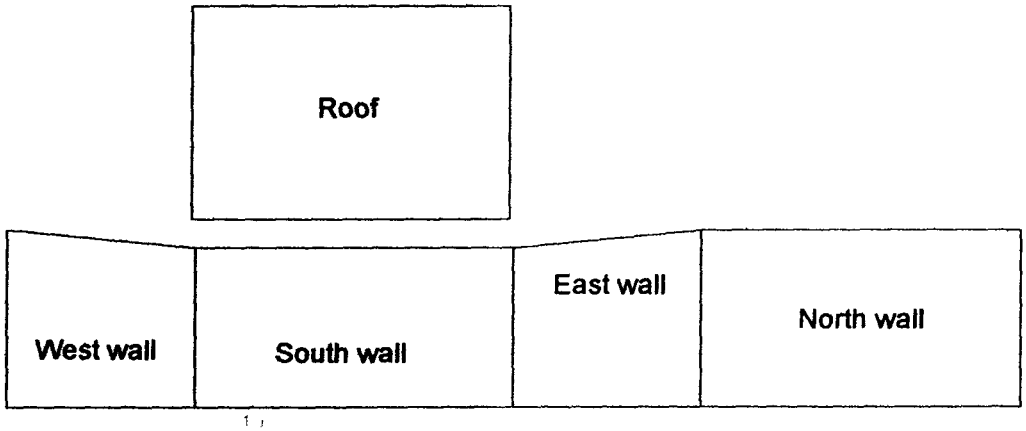
CHEMICAL SAMPLE MAP

Building: 449 Interior & Exterior

449 Interior



449 Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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THE ART OF TECHNOLOGY

Prepared for

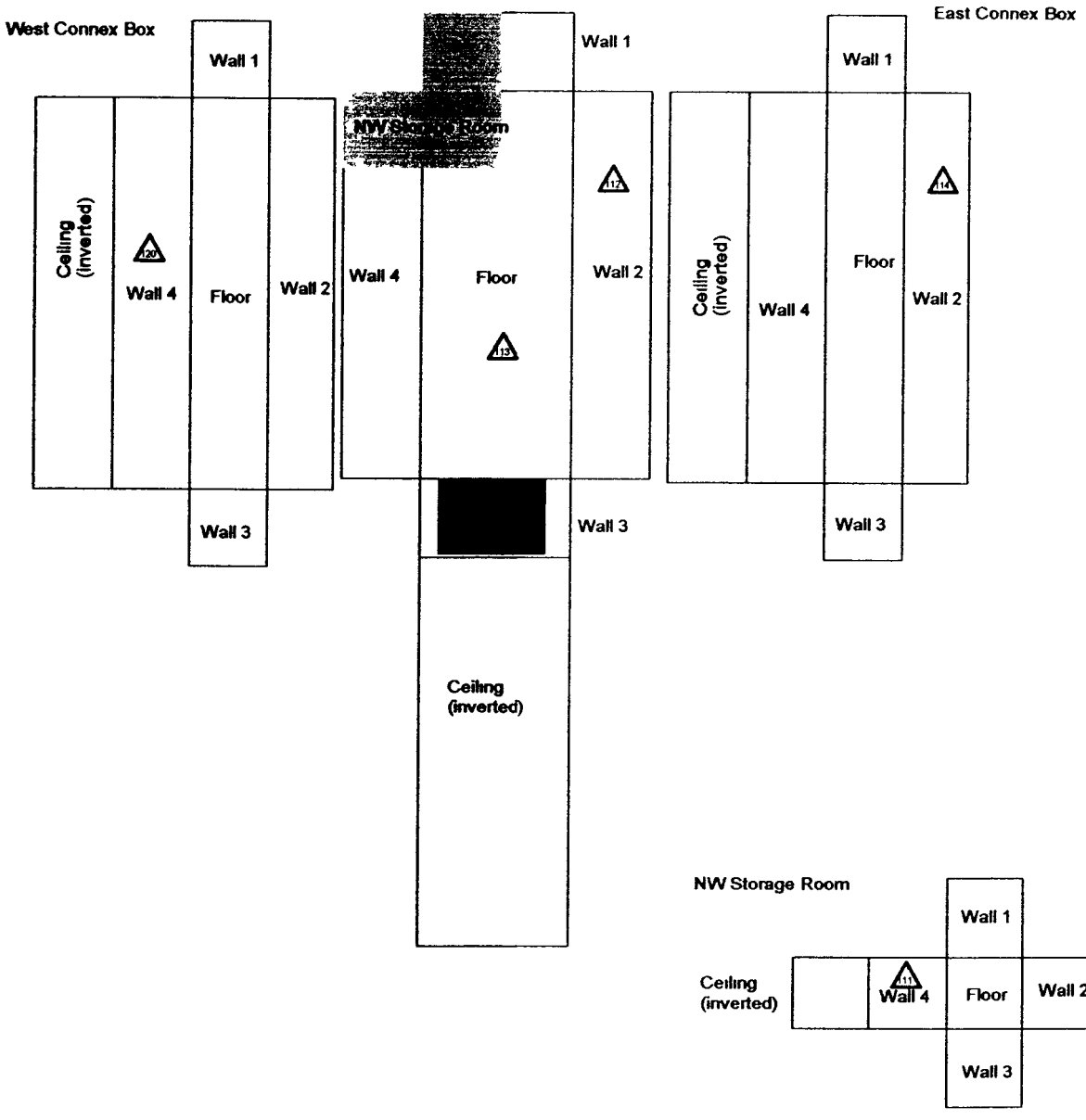
[redacted]

MAP ID 02-0222/449-BE2 September 4, 2002

CHEMICAL SAMPLE MAP

Building: 449A Interior

449A Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m

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MAP ID 02-0222/449A-IN-BE

April 16, 2002

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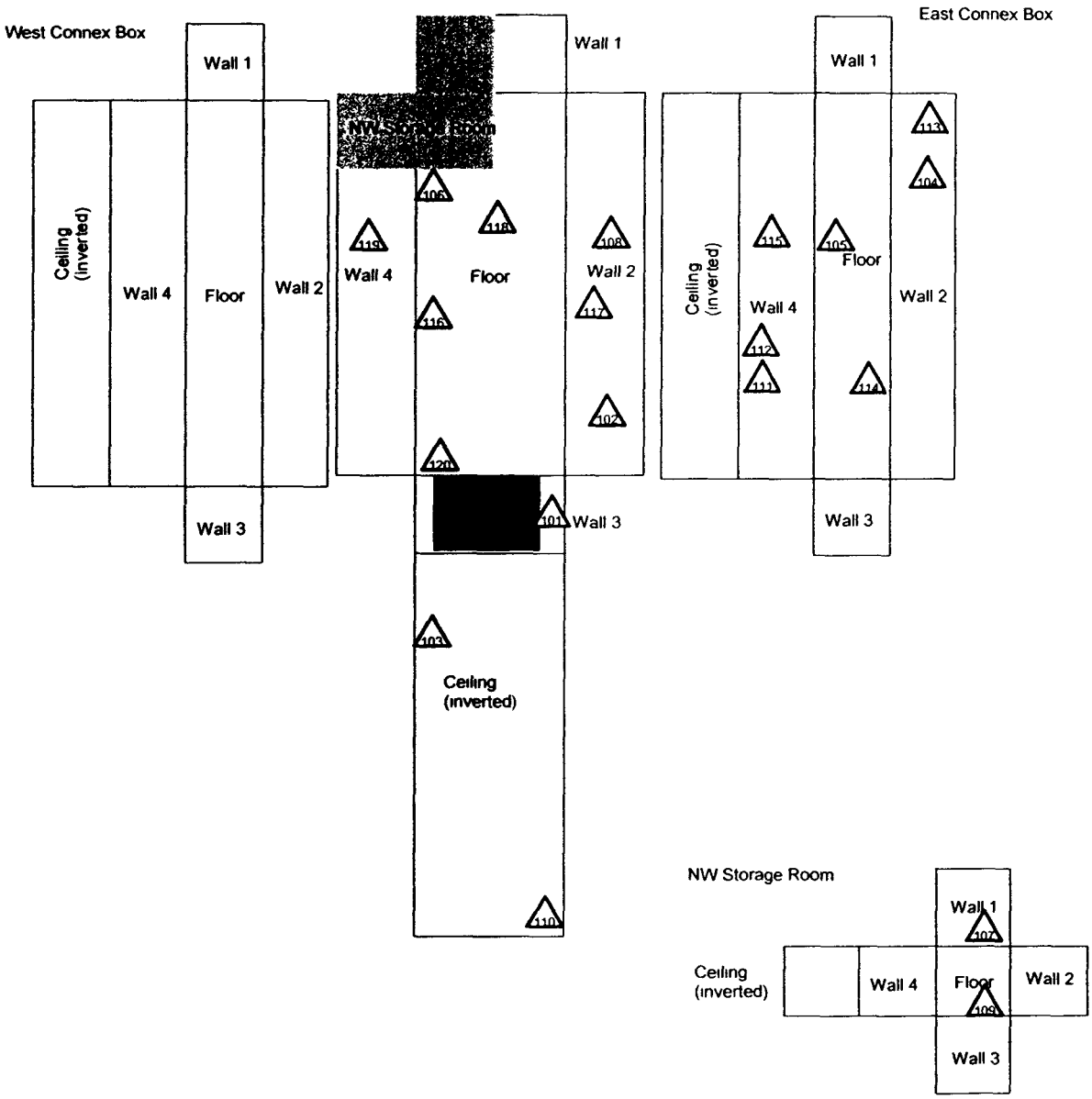
CHEMICAL SAMPLE MAP

Building 449A Interior

449A Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq = 1 sq m

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MAP ID 02-0222/449A-IN-BE August 14, 2002

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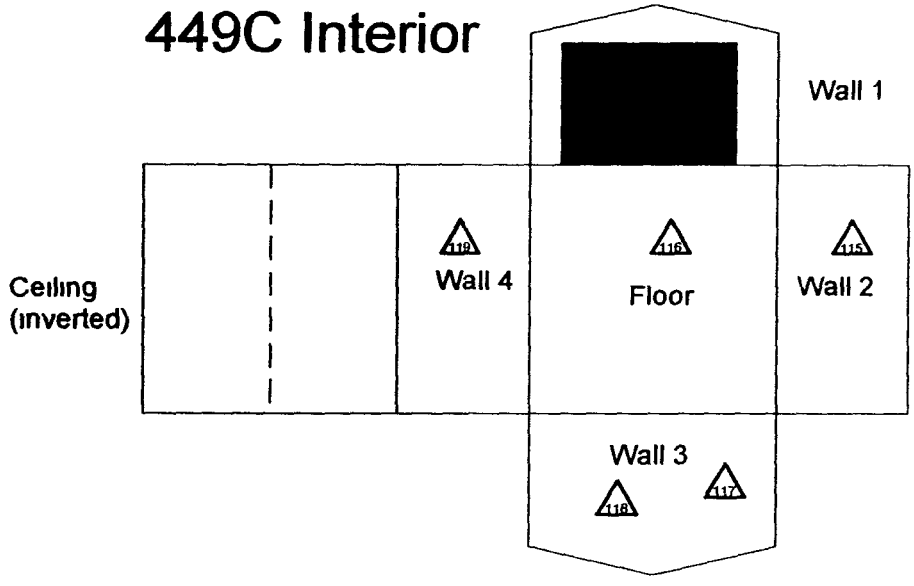
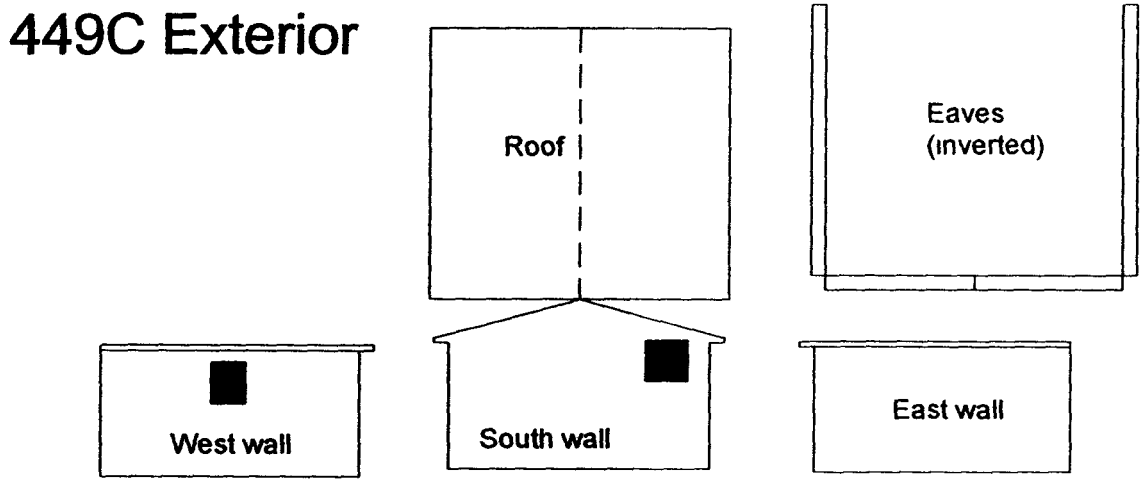
CHEMICAL SAMPLE MAP

Building: 449C Interior & Exterior





SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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MAP ID 02-0222/449C-BE

April 16, 2002

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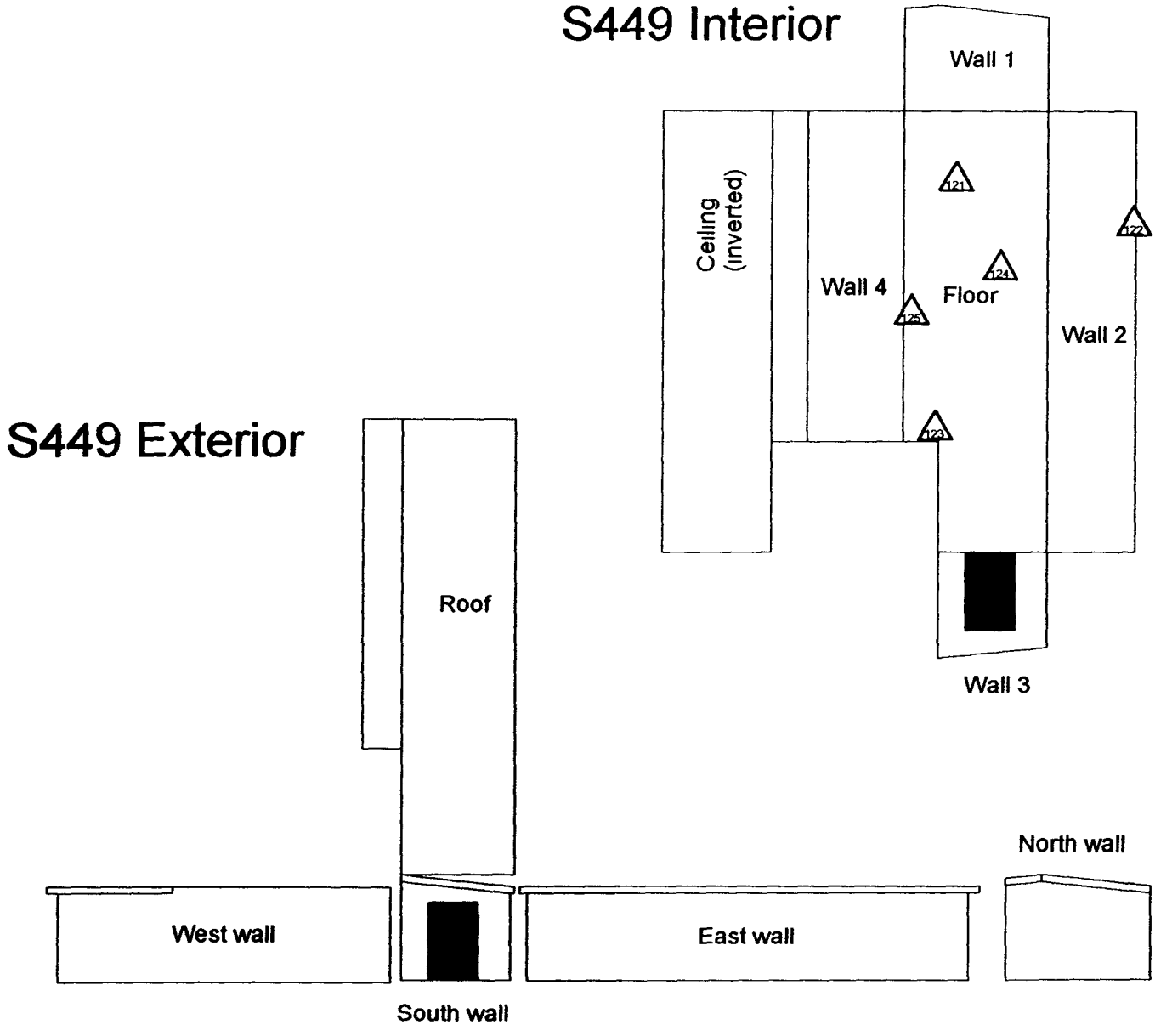
CHEMICAL SAMPLE MAP

Building: S449 Interior & Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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MAP ID 02-0222/S449-BE

July 17, 2002

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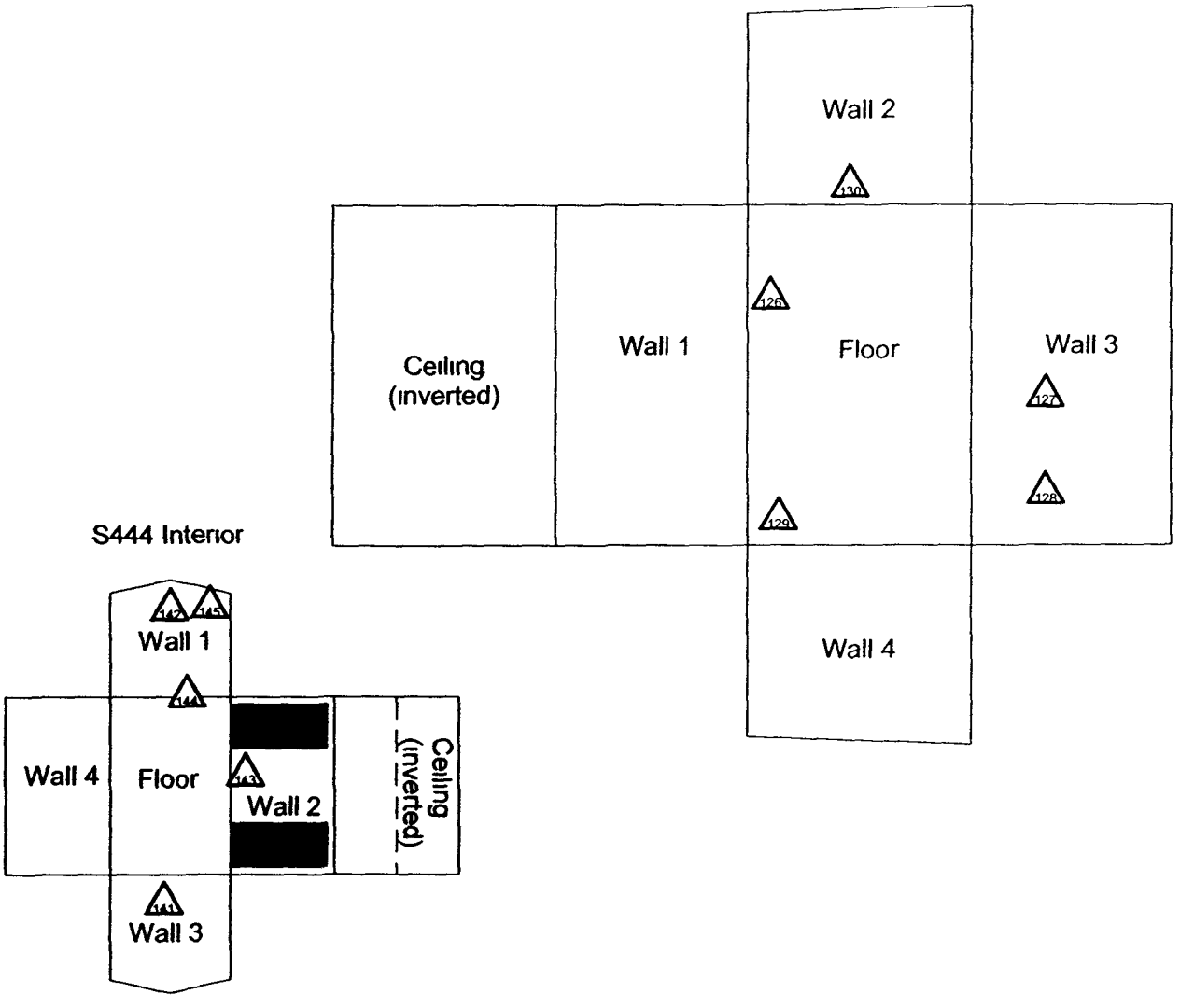
CHEMICAL SAMPLE MAP

Building S444 & 453 Interior

B453 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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KAISER HILL

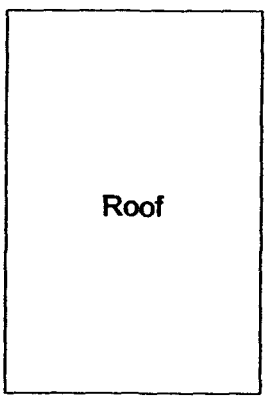
MAP ID 02-0222/B453-INT-BE

April 16, 2002

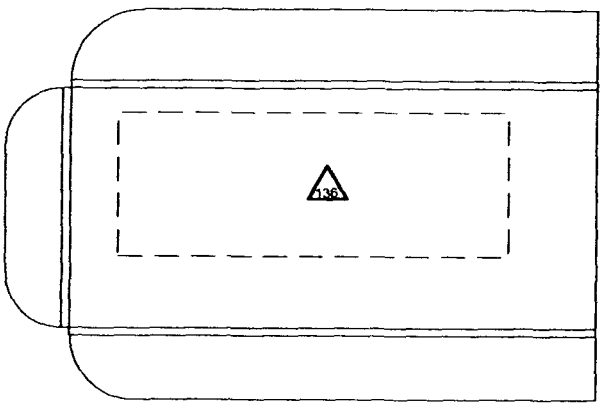
CHEMICAL SAMPLE MAP

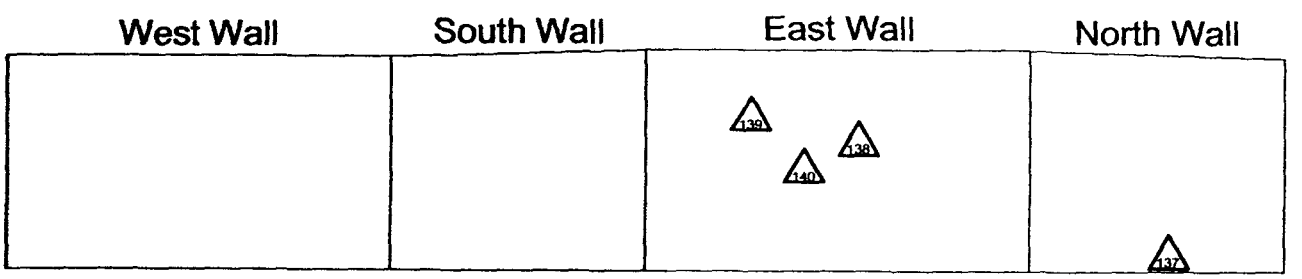
Building: 453 & 457 Pad Exterior

B453 Exterior

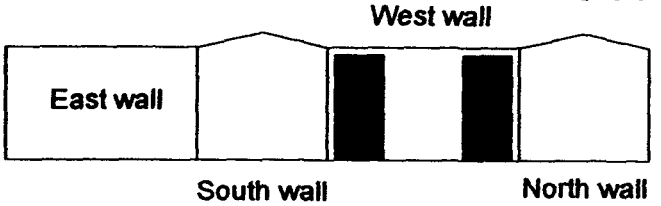


457 Pad

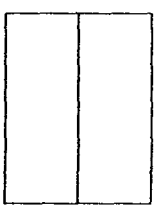




S444 Exterior



Roof



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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MAP ID 02-0222/B453-EXT-BE

April 16, 2002

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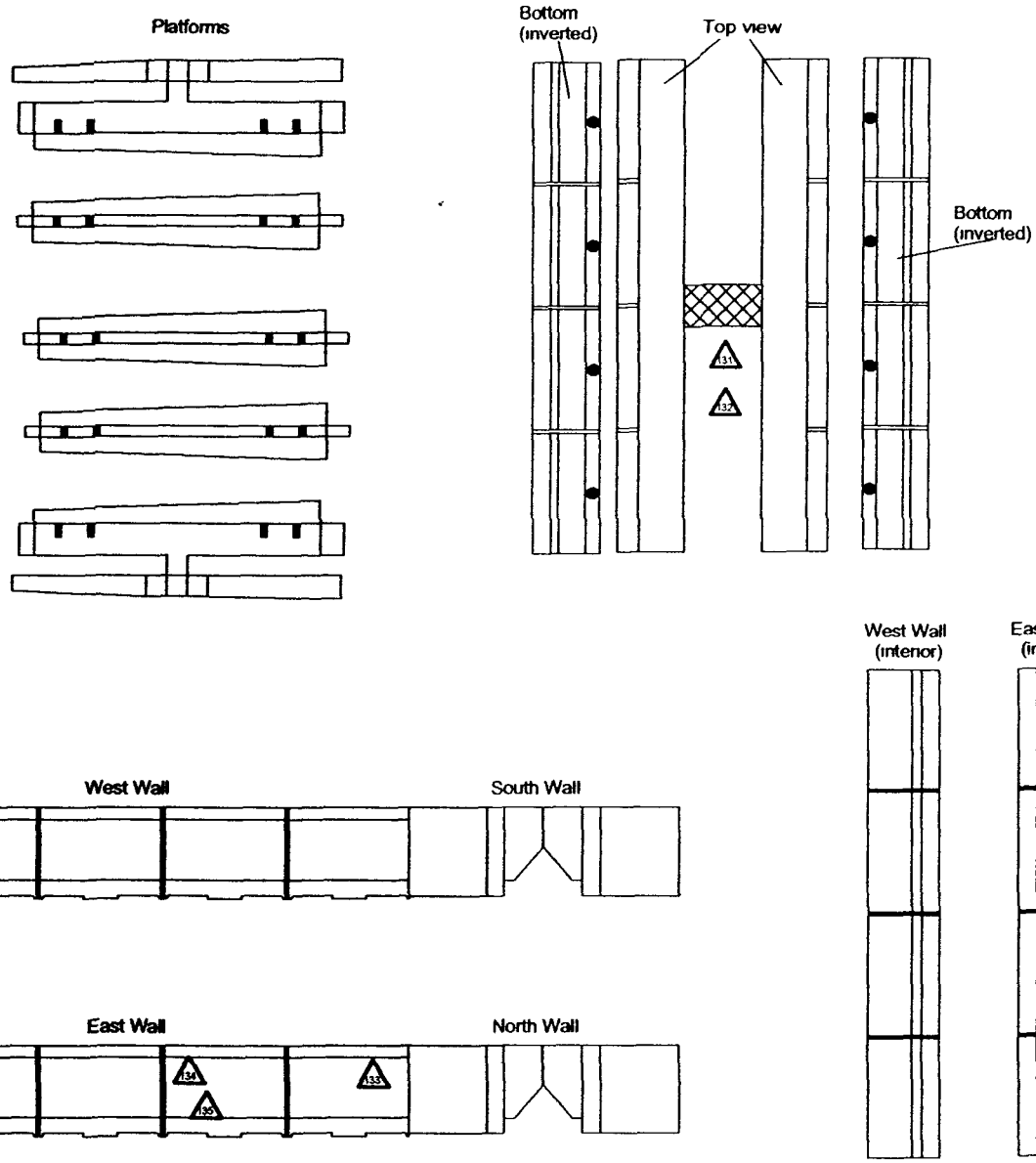
CHEMICAL SAMPLE MAP

Building: 454 Cooling Tower Exterior

454 Cooling Tower Exterior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m

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MAP ID 02-0222/454-BE

April 16, 2002

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PCB Data Summary

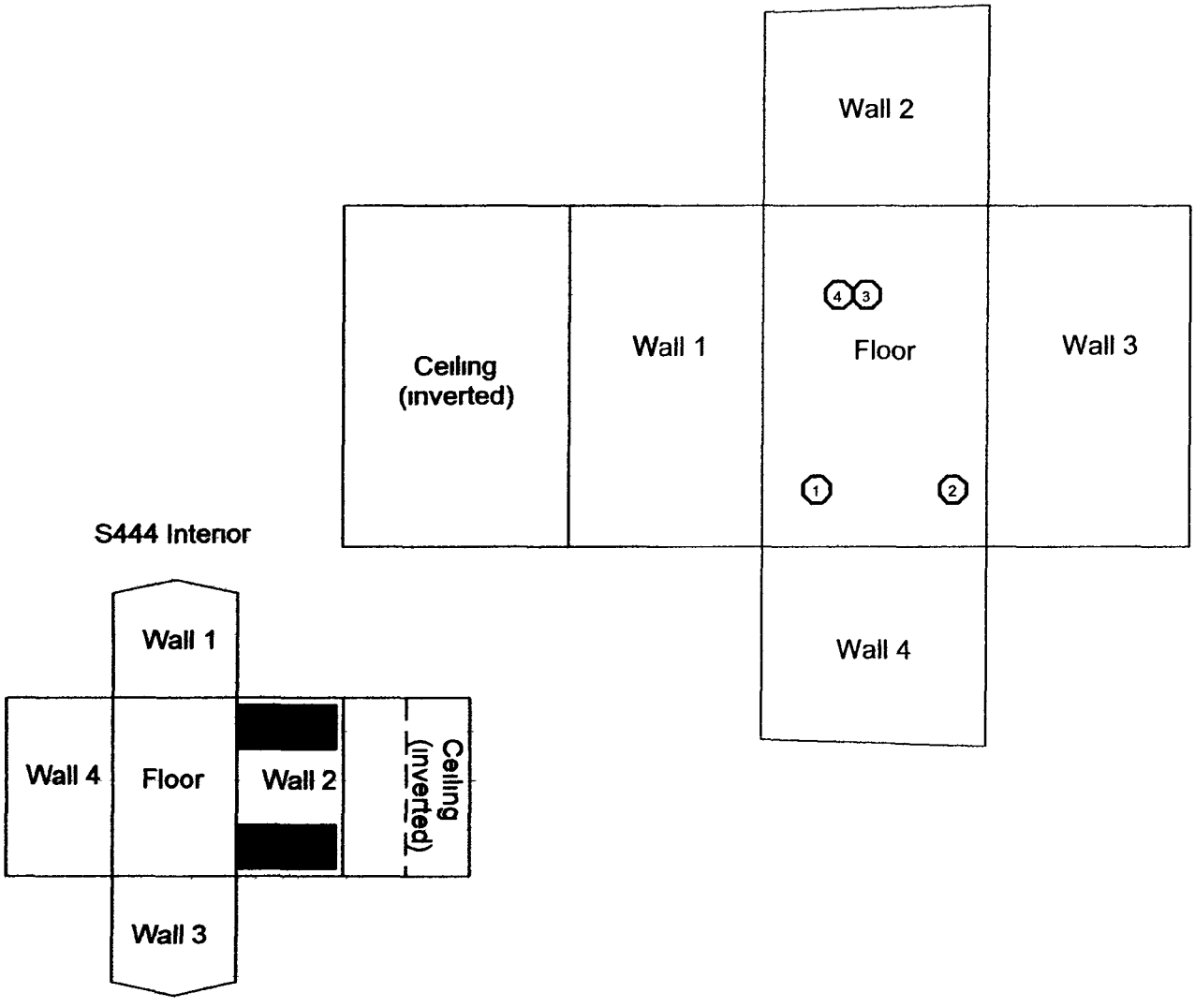
Sample Number	Map Sample Point Location	Sample Location	Aroclor	Results (ug/kg)
02S0139-001 through 004	1-4	Slab, B453	All	Under detection limits

Regulatory Limit for PCB's 50ppm

CHEMICAL SAMPLE MAP

Building 453 Interior

B453 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m.

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KAISER HILL

MAP ID 02-0222/453-PCB

August 28, 2002

RCRA/CERCLA Constituents Data Summary

Sample Location / Media	Sample Number Analysis	Result (ug/L)
Bldg 453 Slab, as indicated on map, Locations # **1–4**	02S0139-**001** 001 thru 02S0139-**004** 001	RCRA Toxicity Characteristic substances less than regulatory limits, RCRA Listed substances not applicable

RCRA Toxicity Characteristic Limits

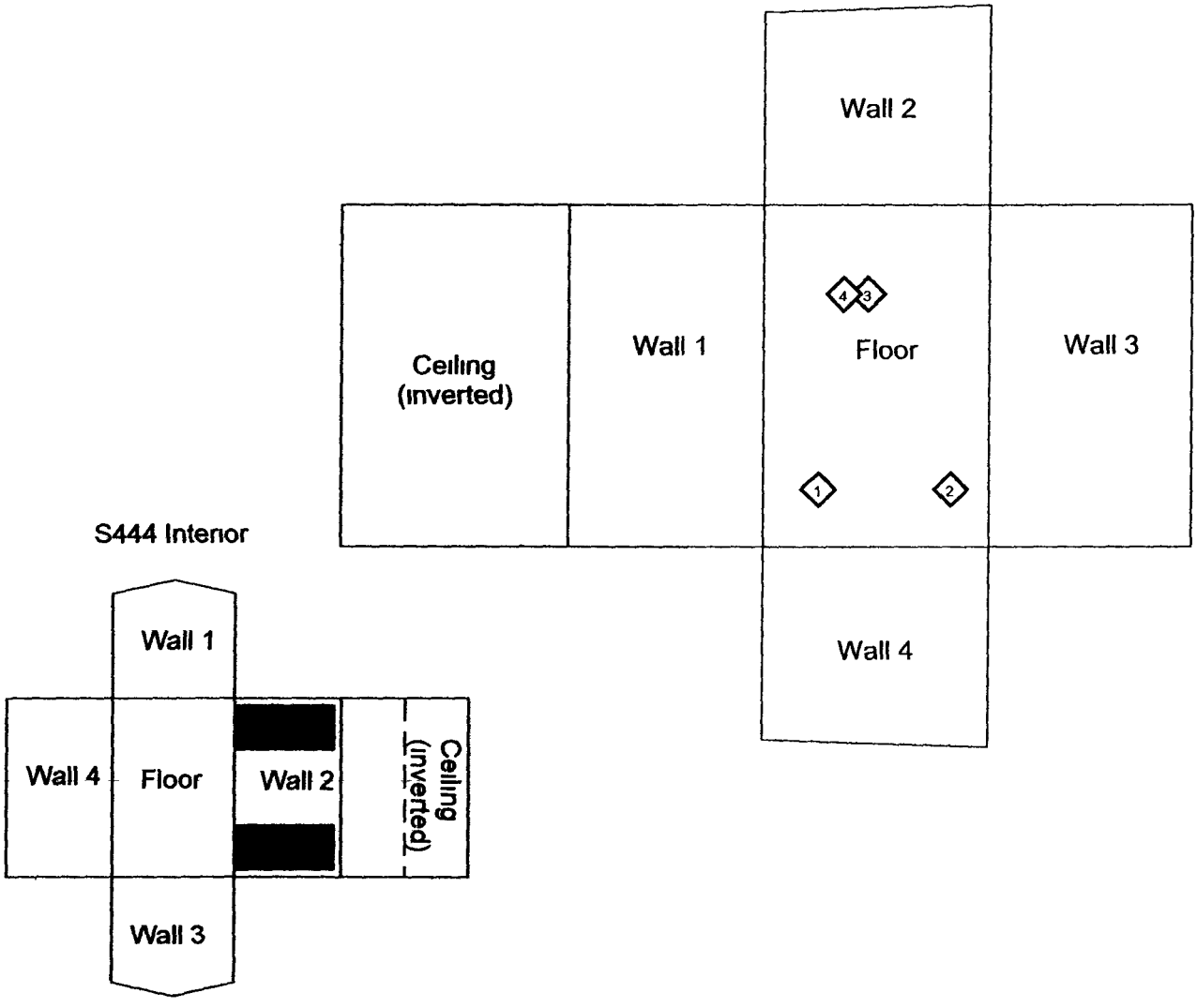
Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5 0
Barium (D005)	100 0
Benzene (D018)	0 5
Cadmium (D006)	1 0
Carbon tetrachloride (D019)	0 5
Chlordane (D020)	0 03
Chlorobenzene (D021)	100 0
Chloroform (D022)	6 0
Chromium (D007)	5 0
o-Cresol (D023)	200 0 (a)
m-Cresol (D024)	200 0 (a)
p-Cresol (D025)	200 0 (a)
Cresol (D026)	200 0 (a)
2,4 –D (D016)	10 0
1,4 Dichlorobenzene (D027)	7 5
1,2 Dichloroethane (D028)	0 5
1,1 Dichlorethylene (D029)	0 7
2,4 Dinitrotoluene (D030)	0 13 (b)
Endrin (D012)	0 02
Heptachlor – and its epoxide (D031)	0 008
Hexachlorobenzene (D032)	0 13 (b)
Hexachlorobutadiene (D033)	0 5
Hexachloroethane (D034)	3 0
Lead (D008)	5 0
Lindane (D013)	0 4
Mercury (D009)	0 2
Methoxychlor (D014)	10 0
MEK (D035)	200 0
Nitrobenzene (D036)	2 0
Pentachlorophenol (D037)	100 0
Pyridine (DD038)	5 0 (b)
Selenium (D010)	1 0
Silver (D011)	5 0
Tetrachloroethylene (D039)	0 7
Toxaphene (D015)	0 5
Trichloroethylene (D040)	0 5
2,4,5-Trichlorophenol (D041)	400 0
2,4,6-Trichlorophenol (D042)	2 0
2,4,5-TP (Silvex) (D017)	1 0
Vinyl Chloride (D043)	0 2

(a) Quantitation Limit is greater than the calculated regulatory level The quantitation limit therefore becomes the regulatory level
(b) If o- m-, and p-Cresol concentrations cannot be differentiated the total Cresol (D026) concentration (200mg/l) is used

CHEMICAL SAMPLE MAP

Building: 453 Interior

B453 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq = 1 sq m

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[redacted]

MAP ID 02-0222/453-RCRA

August 28, 2002

ATTACHMENT E

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses [specifically asbestos, beryllium, metals, volatile organic compounds (VOCs), and PCBs]

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table E-1, asbestos in E-2, beryllium in E-3, metals in E-4, VOCs in E-5, and PCBs in E-6 A data completeness summary for all results is given in Table E-7

All relevant Quality records supporting this report are maintained in the RISS Characterization Project Files All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators

Beta/gamma survey designs were not implemented for the building 444 Cluster facilities based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this approach

Consistent with EPA's G-4 DQO process, the radiological survey design (for those survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs All data are useable based on qualifications stated herein and are considered satisfactory without qualification All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties, except the following anomalous conditions and/or identified areas above unrestricted release limits

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- Asbestos Containing Material (ACM) was identified at the 457 Pad (exterior), sample location # 227, pipe caulking containing 15% Chrysotile by volume The ACM will be managed as part of D&D activities prior to demolition

- One beryllium sample (#108 - 0 103 ug/100cm^2) in B449 was identified above the investigative level of 0 1 ug/100cm^2 In accordance with MAN-127-PDSP, four follow-up investigative samples (#146 through #149) were taken to confirm results Sample #147 (0 181 ug/100cm^2) was below the action level Sample # 149 (0 495 ug/100cm^2) was greater than the action level of 0 2 ug/100cm^2 The source of contamination (tool cabinet) was removed to an approved Beryllium storage location Twenty (20) additional beryllium smears were taken in B449 to confirm the area is below unrestricted release limits (0 2 ug/100cm^2) However, one result (sample # 449-09032002-231-110) from inside the wall-mounted respirator cabinet was 0 299 ug/100cm^2 After the respirator cabinet was removed from the building to an approved beryllium storage container, five follow-up smears were taken of the area with one result on the concrete floor in the northeast corner of the building greater than 0 1 µg/100cm^2 Four additional investigative smears were taken in the area of interest, and all results were less than 0 1 µg/100cm^2 thereby confirming Type 1 facility classification

- One beryllium sample was identified in B449A (sample location #120 – 31 7 ug/100cm^2) that was greater than the action level of 0 2 ug/100cm^2 Subsequent to the RLC beryllium sampling, RFETS Industrial Hygiene conducted smear sampling for beryllium on May 1, 2002 and found an additional location (0 333 µg/100cm^2) greater than the action level (see Industrial Hygiene Information System Sample Results Report) B449A was decontaminated and follow up smears were taken by RFETS Industrial Hygiene on May 9, 2002, with all results less than 0 1 µg/100cm^2 (See Attachment D *Beryllium Data Summary* table) On August 14, 2002, twenty (20) biased beryllium smears were taken with all results less than 0 1 µg/100cm^2 confirming successful decontamination of B449A and Type 1 facility classification (See Attachment D *Beryllium Data Summary* table)

- B453 (sample locations #126 - 0 300 ug/100cm^2 and #130 - 0 233 ug/100cm^2) were greater than the action level of 0 2 ug/100cm^2 However, this building will not be decontaminated at this time and is classified as a Type 2 facility

- Elevated alpha activity was detected in B449 at sample location #10 (108 dpm/100cm^2) that was greater than the transuranic DCGL$_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE-Added (americium and plutonium) isotope activity was detected Results indicated only uranium and other naturally occurring isotopes were present The net activity of 108 dpm/100cm^2 is below the uranium DCGL$_w$ (5000 dpm/100cm^2) All survey results are less than the applicable DCGL$_w$ unrestricted release limits and no further investigation is required

- Elevated alpha activity was detected in B449A at sample location #11 (121 7 dpm/100cm^2) that was greater than the transuranic DCGL$_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE- Added (americium or plutonium) isotope activity was detected Results indicated only

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uranium and other naturally occurring isotopes were present The net activity of 121 7 dpm/100cm^2 is below the uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

- Elevated alpha activity was detected on the 457 Pad at sample location #14 (109 9 dpm/100cm^2) was greater than the transuranic $DCGL_w$ (100 dpm/100cm^2) One media sample (surface concrete) was taken and analyzed by gamma spectroscopy No DOE-Added (americium or plutonium) isotope activity was detected Media net activity was converted to dpm/100cm^2 using the Media Sample Conversion Sheet (see Radiological Data Summary) Elevated activity was determined to be from uranium and naturally occurring isotopes The calculated uranium value of 245 7 dpm/100cm^2 is below the uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

- Elevated alpha activity was detected in B454 at sample location #11 (160 3 dpm/100cm^2) that was greater than the transuranic $DCGL_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE- Added (americium or plutonium) isotope activity was detected Results indicated only uranium contamination and other naturally occurring isotopes were present The net activity of 160 3 dpm/100cm^2 is below the uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

- The standard deviation for Survey Unit 444-A-007 (B453 and 457 Pad) was > 30 (actual standard deviation of 31 4) The number of data points was recalculated using the actual standard deviation value of 31 4 as the sigma and determined the minimum number of samples required is 12 27 On this basis, a sufficient number of samples (15) were taken in accordance with MARSSIM guidelines Additionally, the original sample quantity of 15 included a 20% correction factor thereby ensuring an adequate number of samples taken

- The standard deviation for Survey Unit 444-A-008 (B454 Cooling Tower) was > 30 (actual standard deviation of 39 1) The number of data points was recalculated using the actual standard deviation value of 39 1 as the sigma and determined the minimum number of samples required is 14 24 On this basis, a sufficient number of samples (15) were taken in accordance with MARSSIM guidelines Additionally, the original sample quantity of 15 included a 20% correction factor thereby ensuring an adequate number of samples taken

Chain of Custody was intact, documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process Level 2 Isolation Controls will be posted to prevent the inadvertent introduction of contamination into the facilities On this basis, the Building 444 Cluster Type 1's meet the unrestricted release criteria with the confidences stated herein, or shall otherwise be managed in an approved manner Also on this basis, the Building 453 is considered to be a Type 2 facility

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Table E-1 V&V of Radiological Surveys For Building 444 Anticipated Type 1's

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)		
	QUALITY REQUIREMENTS			
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field, programmatic records
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range
	Local area background Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i e , no elevated anomalies)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM gridding methodology Survey Units 444-A-001, 444-A-003, 444-A-004, 444-A-005, 444-A-006, 444-A-007, 444-A-008	statistical and biased	NA	Random w/ statistical confidence
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m
	Controlling Documents (Characterization Pkg, RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys Usable results vs unusable	>95% >95%	NA	See Table E-7 for details
SENSITIVITY	Detection limits	TSA ≤50 dpm/100cm^2 RA ≤10 dpm/100cm^2	all measures	RLC performed to PDS MDAs ≤ 50% $DCGL_w$

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Table E-2 V&V of Chemical Results-Asbestos For Building 444 Anticipated Type 1's

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	02D1160	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation
PRECISION	Actual Number Of Samples LCSD Lab Duplicates	all below detectable amounts	≥ 27 samples	Semi-quantitative, per (microscopic) visual estimation
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact completed paperwork, containers w/ custody seals
	Hold times/preservation	Qualitative	NA	Not applicable
	Controlling Documents (Plans, Procedures, Maps, etc)	Qualitative	NA	See original Chemical Characterization Package (planning document), for field/sampling procedures, thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Measurement units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	Qualitative	NA	See Table E-7, final number of samples at Certified Inspector's discretion
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

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Table E-3 V&V Of Chemical Results-Beryllium For Building 444 Anticipated Type 1's

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	**Prep NMAM 7300** **METHOD OSHA ID-125G**	**LAB ---->**	Johns Manville, Littleton, Co	
		RIN's ---->	02D1161 02D1178 (follow up investigative samples) 02D1463 02Z0825 (B449-20 Post Decon Smears) 02Z0860 (5 follow up investigative smears for 449) 02D1511 (4 final investigative smears for 449)	

QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	**Calibrations** Initial	linear calibration	≥1	Significant qualifications required project decision changes to • 449A West Connex into an approved beryllium storage container and, • B453 to a Type 2 facility
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans Procedures maps etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0 012 ug/100cm^2	all measures	

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Table E-4 V&V of Chemical Results-Metals For Building 444 Anticipated Type 1's

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
Metals (total)	METHOD SW6010/6020	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0139	
				COMMENTS
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, TCLP results well below associated action levels and regulatory limits
ACCURACY	**Calibrations** Initial	linear calibration	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - lab	mg/kg	≥1/batch	
	Serial dilutions	%D<10%	≥1/batch	
	Interference check std (ICP)	80%<%R<120%	bracket batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤180 days	NA	
	Controlling Documents (Plans Procedures Maps etc)	Qualitative	NA	
COMPARABILITY	Measurement units	mg/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

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Table E-5 V&V of Chemical Results-Volatile Organic Compounds (VOCs) For Building 444 Anticipated Type 1's

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
VOCs	METHOD SW8260	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0139	
QUALITY REQUIREMENTS		**Measure**	**Frequency**	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all results were below regulatory limits
ACCURACY	**Calibrations** Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans Procedures maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

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Table E-6 V&V of Chemical Results – PCBs For Building 444 Anticipated Type 1's

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
PCBs	METHOD. SW8082	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0139	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	r^2 >0 99	≥1/batch	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all PCB concentrations well below associated action levels (< 50 ppm)
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - Labs	<MDL	≥1/batch	
PRECISION	MSD	75%<%R<125%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤30 days extract ≤45 days analysis	NA	
	Controlling Documents (Plans Procedures maps etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B453 (exterior) and 457 Pad (exterior)	4 biased (B453/3 exterior and 457 Pad/1 exterior)	4 biased (B453/3 exterior and 457 Pad/1 exterior)	ACM present > 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160 457 Pad - Sample location #227, 15% Chrysotile – pipe caulking, gray resinous material with silver/tan paint, exterior
Asbestos	B449 (interior)	2 biased (interior)	2 biased (interior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Asbestos	B427 Generator Bldg (interior and exterior)	12 biased (9 interior and 3 exterior)	12 biased (9 interior and 3 exterior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Asbestos	B449C (interior)	3 biased (interior)	3 biased (interior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Asbestos	B449A (interior)	3 biased (interior)	3 biased (interior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Asbestos	S449 (Shed) (interior and exterior)	2 biased (1 interior & 1 exterior)	2 biased (1 interior & 1 exterior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Asbestos	454 Cooling Tower (exterior)	1 biased (exterior)	1 biased (exterior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1160
Beryllium	B453 (exterior) and 457 Pad (exterior)	5 biased (B453/4 ext samples and 457 Pad/ 1 ext sample)	5 biased (B453/4 exterior samples and 457 Pad/ 1 exterior sample)	No contamination found at any location	10CFR850, OSHA ID-125G RIN02D1161 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2)

Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Beryllium	B449 (interior)	9 biased (interior)	9 biased (interior)	Contamination found above the investigative level (0 1 ug/100cm^2) and action level (0 2 ug/100cm^2)	10CFR850, OSHA ID-125G RIN#02D1161 (sample numbers 106 through 110) RIN#02D1178 (additional follow up samples #146 through #149) RIN#02Z0825 (20 Post Decon Smears) Initial sample location #108 was above the investigative level of 0 1 ug/100cm^2 (103 ug/100cm^2) Per MAN-127-PDSP requirements, an additional 4 investigative samples were taken (#'s146 through 149) and compared to the unrestricted release level of 0 2 ug/100cm^2 Sample #147 was 181 ug/100cm^2 (< unrestricted release level of 0 2 ug/100cm^2) However, sample #149 was 495 ug/100cm^2 (> action level of 0 2 ug/100cm^2) Building was decontaminated confirming Type 1 facility classification RIN02Z0860 5 investigative Be smears for 449 after respirator cabinet removal- sample #449-09112002-603-110 > 0 1 ug/100cm^2 (0 112 ug/100cm^2) RIN02D1511 4 final investigative Be smears for sample #449-09112002-603-110 all results < 0 1 ug/100cm^2
Beryllium	B449A (interior)	5 biased (interior)	5 biased (interior)	Contamination found above the action level (0 2 ug/100cm^2) at one sample location	10CFR850, OSHA ID-125G RIN02D1463 (sample #'s 101-120) and RIN02D1161 (sample #'s 111-114 and 120) Sample location #120 (31 7 ug/100cm^2) is greater than the action level of 0 2 ug/100cm^2 Building was decontaminated confirming Type 1 facility classification

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Beryllium	B427 Generator Bldg (interior)	5 biased (interior)	5 biased (interior)	No contamination found at any location	10CFR850, OSHA ID-125G - RIN02D1161 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2)
Beryllium	B449C (interior)	5 biased (interior)	5 biased (interior)	No contamination found at any location	10CFR850, OSHA ID-125G - RIN02D1161 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2
Beryllium	B453 (interior) and S444 Bus Stop (interior)	10 biased (B453/5 ext samples and S444 Pad/ 5 ext samples)	10 biased (B453/5 ext samples and S444 Pad/ 5 ext samples)	Contamination found above the action level (0 2 ug/100cm^2) at two sample locations	10CFR850, OSHA ID-125G, RIN02D1161 Results for both sample locations were greater than the action level of 0 2 ug/100cm^2 – location #126 (B453) was 300 ug/100cm^2 and location #130 (B453) was 223 ug/100cm^2 B453 will not be decontaminated and is classified as a Type 2 facility
Beryllium	S449 (interior)	5 biased (interior)	5 biased (interior)	No contamination found at any location	10CFR850, OSHA ID-125G - RIN02D1161 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2)
Beryllium	454 Cooling Tower (exterior)	5 biased (exterior)	5 biased (exterior)	No contamination found at any location	10CFR850, OSHA ID-125G - RIN02D1161 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2)
Metals (total and TCLP)	B453 (interior)	Dependent on walk down	3 (solid) 1 duplicate	No metals exceeded the regulatory limits, no metal contamination found	SW846 1311, SW846 6010/6010B – RIN02S0139 All results were below regulatory limits

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
VOCs	B453 (interior)	Dependent on walk down	3 (solid) 1 duplicate	No VOCs exceeded the regulatory limits, no VOC contamination	6 CCR 1007-3, SW846 1311/Method 8260 - RIN02S0139 All results were below regulatory limits
PCBs	B453 (interior)	Dependent on walk down	3 (solid) 1 duplicate	No PCB contamination found, all results less than the regulatory limit	40CFR761, SW846/Method 8082 – RIN02S0139 All results less than 50 ppm, no contamination found
Radiological	Survey Area A Survey Unit 444-A-001 Bldg 427 (interior and exterior)	15 α TSA and 15 α Smears (random) 2 QC TSA 5% scan	15 α TSA and 15 α Smears (random) 2 QC TSA 5% scan (16 interior/14 exterior)	No contamination at any location, all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable
Radiological	Survey Area A Survey Unit 444-A-003 Bldg 449 (interior and exterior)	15 α TSA and 15 α Smears (random) 2 QC TSA 5% scan	15 α TSA and 15 α Smears (random) 2 QC TSA 5% scan (5 interior/10 exterior)	No contamination at any location, all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable Elevated alpha activity was detected in B449 at sample location #10 (108 dpm/100cm^2) that was greater than the Transuranic $DCGL_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE- Added (americium and plutonium) isotope activity was detected Results indicated only uranium and other naturally occurring isotopes were present The net activity of 108 dpm/100cm^2 is below the Uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Radiological	Survey Area A Survey Unit 444-A-006 Bldg S449 (interior and exterior)	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan (8 interior/22 exterior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_w$ or $DCGL_{emc}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum)
Radiological	Survey Area A Survey Unit 444-A-004 Bldg 449A (interior and exterior)	25 α TSA and 25 α Smears (15 random/10 biased) 2 QC TSA 5% scan	25 α TSA and 25 α Smears (15 random/10 biased) 2 QC TSA 5% scan (12 interior/13 exterior)	No contamination at any location, all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable Elevated alpha activity was detected in B449A at sample location #11 (121 7 dpm/100cm^2) that was greater than the Transuranic $DCGL_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE- Added (americium or plutonium) isotope activity was detected Results indicated only uranium and other naturally occurring isotopes were present The net activity of 121 7 dpm/100cm^2 is below the Uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Radiological	Survey Area A Survey Unit 444-A-005 Bldg 449C (interior and exterior)	15 á TSA 15 á Smears (random) 2 QC TSA 5% scan	15 á TSA 15 á Smears (random) 2 QC TSA 5% scan (6 interior/24 exterior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_w$ or $DCGL_{emc}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum)
Radiological	Survey Area A Survey Unit 444-A-007 Bldg 453 (interior and exterior) and 457 Pad (exterior)	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan (B453 - 7int /6 ext and 457 Pad - 2 ext)	No contamination at any location, all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable Elevated TSA activity at sample location #14 (109 9 dpm/100cm^2) was greater than the Transuranic $DCGL_w$ (100 dpm/100cm^2) One media sample (surface concrete) was taken and analyzed by gamma spectroscopy No transuranic isotopes (americium or plutonium) were detected Media net activity was converted to dpm/100cm^2 using the Media Sample Conversion Sheet (see Radiological Data Summary) Elevated activity was determined to be from uranium and naturally occurring isotopes Calculated uranium value of 245 7 dpm/100cm^2 is below the Uranium $DCGL_w$ (5000 dpm/100cm^2) All survey results are less than the applicable $DCGL_w$ unrestricted release limits and no further investigation is required

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Table E-7 Data Completeness Summary For Building 444 Anticipated Type 1's

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Radiological	Survey Area A Survey Unit 444-A-008 Bldg 454 Cooling Tower (interior and exterior)	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan (3 interior and 12 exterior)	No contamination at any location, all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable Elevated alpha activity was detected in B454 at sample location #11 (160 3 dpm/100cm^2) that was greater than the Transuranic DCGL$_w$ (100 dpm/100cm^2) One coupon sample was taken and analyzed by gamma spectroscopy No DOE- Added (americium or plutonium) isotope activity was detected Results indicated only uranium and other naturally occurring isotopes were present The net activity of 160 3 dpm/100cm^2 is below the Uranium DCGL$_w$ (5000 dpm/100cm^2) All survey results are less than the applicable DCGL$_w$ unrestricted release limits and no further investigation is required

[A] Number of Asbestos samples required is an estimate only, final number of samples is at the discretion of the IH
[B] Interior = int and Exterior = ext

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